SUNG HOON KANG
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EDUCATION

Harvard University — Cambridge, MA
Ph.D., Applied Physics, School of Engineering and Applied Sciences — May 2012
Thesis: Self-Organization of Bioinspired Fibrous Surfaces
Advisor: Prof. Joanna Aizenberg

Massachusetts Institute of Technology — Cambridge, MA
S.M., Materials Science and Engineering — 2004
Thesis: Evaporative Printing of Organic Materials & Metals and Development of Organic Memories
Advisor: Prof. Vladimir Bulović

Seoul National University — Seoul, Korea
B.S., *summa cum laude*, Materials Science and Engineering — 2000

PROFESSIONAL EXPERIENCE

Johns Hopkins University — Baltimore, MD
Assistant Research Professor, Dept. of Mechanical Engineering — January 2024-Present

Johns Hopkins University — Baltimore, MD
Assistant Professor, Dept. of Mechanical Engineering — January 2015-December 2023

Air Force Research Laboratory — Dayton, OH
Summer Faculty Fellow (Host: Drs. Philip Buskohl, Jeffery Baur) — Summer 2020, 2021

Harvard University — Cambridge, MA
Postdoctoral Fellow (Advisor: Prof. Katia Bertoldi) — June 2012-December 2014

Harvard University — Cambridge, MA
Research Assistant (Advisor: Prof. Joanna Aizenberg) — January 2008-May 2012

EIC Laboratories, Inc. — Norwood, MA
Staff Scientist (Supervisor: Dr. Krishna C. Mandal) — November 2004-July2007

Massachusetts Institute of Technology — Cambridge, MA
Research Assistant (Advisor: Prof. Vladimir Bulović) — July 2001-October 2004

AWARDS AND HONORS

Young Innovator Award, Nano Research — 2023

Invitee, First U.S.-Africa Frontiers of Science, Engineering, and Medicine Symposium — 2022
National Academies of Sciences, Engineering, and Medicine
- *one of ~40 US participants representing science, engineering, and medicine*

Hanwha Non-Tenured Faculty Award (with $12,000 unrestricted gift) — 2022

- one of four recipients among researchers with Korean heritage from North America and Europe working on advanced materials and processing

Air Force Summer Faculty Fellowship 2021, 2020

Johns Hopkins University Catalyst Award (with $75,000 grant) 2020
- $75,000 award to support the promising research and creative endeavors of early career faculty with the goal of launching them on a path to a sustainable and rewarding academic career

Invitee, China-America Frontiers of Engineering, National Academy of Engineering 2019
- one of seven US engineers representing new materials area

Johns Hopkins University Whiting School of Engineering Research Lab Excellence Award 2019
- one in engineering school annually

FY 2018 Air Force Office of Scientific Research Young Investigator Program Award 2017

Invitee, U.S. Frontiers of Engineering, National Academy of Engineering 2016
- the total number of 100 engineers, generally 30-45 year olds, from industry, universities, and government labs attended to represent the full range of research in various engineering fields

NSF Fellowship for Summer Institute on Additive Manufacturing (Evanston, IL) 2013

Graduate Student Award Gold Medal, Materials Research Society 2011
- award to recognize students of exceptional ability who show promise for significant future achievement in materials research, one of six awardees in the world

MENTEE AWARDS AND HONORS

Lujia Liu (undergraduate student) 2023
JHU James F. Bell Award for outstanding research and scholarly achievement in Mechanical Engineering

Beijun Shen (PhD student) 2022
American Physical Society Division of Soft Matter Travel Award
Gordon Research Conference on Multifunctional Materials Travel Award

Bohan Sun (PhD student) 2022
Gordon Research Conference on Multifunctional Materials Travel Award

Mostafa Omar (PhD student) 2022
Gordon Research Conference on Multifunctional Materials Travel Award

Kate Concannon (Master student) 2022
Distinguished Master's Fellowship

Tessa Van Volkenburg (DEng student) 2021
Materials Research Society Fall Meeting Best Poster Award
Winner of 2021 Hopkins Space Seed Grant as a PI
NASA Jet Propulsion Laboratory Europa In Situ Lander Conference Young Professional Travel Grant

Christopher Shallal (undergraduate student) 2021
National Science Foundation Graduate Research Fellowship
MIT Presidential Fellow
JHU Department of Biomedical Engineering Linda Trinh Memorial Award

Adebayo Eisape (PhD student) 2021
Microsoft PhD Fellowship

John Wu (undergraduate student) 2021
JHU Robert George Gerstmyer Award for outstanding achievement in mechanical engineering

Mostafa Omar (PhD student) 2021
JHU Department of Mechanical Engineering Creel Family Teaching Assistant Award

Adebayo Eisape (PhD student) 2020
2nd Place Award in National Inventors Hall of Fame Collegiate Inventors Competition

Christopher Shallal (undergraduate student) 2020
Clinton Foundation Covid-19 Student Action Fund

Daniel Wang (undergraduate researcher) 2020
JHU Robert George Gerstmyer Award for outstanding achievement in mechanical engineering

Lichen Fang (PhD student) 2019
ASME Applied Mechanics Division Haythornthwaite Foundation Student Travel Award

Ozan Erol (Postdoctoral fellow) 2019
National Institute of Health NRSA F32 Post-Doctoral Fellowship (declined)
Johns Hopkins University Whiting School of Engineering Research Trainee Award Finalist

Rebecca Grusby (undergraduate researcher) 2018
Johns Hopkins University Provost's Undergraduate Research Award (PURA)

Yishu Yan (MSE student) 2018
ASME International Mechanical Engineering Congress and Exposition NSF Poster Competition Travel Award

Khalid Elawad (undergraduate researcher) 2017
American Society of Cell Biology MAC Travel Award and 2nd place poster award

PUBLICATIONS (>8,800 citations, h-index = 35 from google scholar)

(**bold**: graduate student or post-doc in my lab, ***italic***: undergraduate in my lab, ᵛ: visiting student/faculty in my lab, *:corresponding author)

65. **G. Oh** ᵛ, J.-H. Lim, S. H. Kang*, B. M. Weon*, "Contact line length dominance in evaporation of confined nonspherical droplets," Physical Review Research, 6, L012026 (2024).

64. **G. Kitchen**, **B. Sun,** S. H. Kang*, "Bioinspired Nanocomposites with Self-Adaptive Mechanical Properties," **Nano Research,** 17, 633 (2024). (**invited review for Young Innovator Award**)

63. **B. Sun,** S. H. Kang*, "A mechanically one-way material," **Science**, 380, 135 (2023). (**invited**)

62. N. Buettner+, **G. Kitchen**+, **M. Omar**+, **B. Sun**+, H. Lee, S. H. Kang*, A.-T. Akono*, "Nanoscale Characterizations of Mineralized Piezoelectric Scaffolds," **MRS Advances**, 8, 1082 (2023). (+: equal contribution) (**invited**)

61. K. A. Gerling, D. P. Stonko, **H. Xun**ᵛ, ***C. Shallal***, S. H. Kang, G. Brandacher, A. L. Lauria, A. J. Kersey, D. M. Burmeister, B. W. Propper, J. M. Sacks, C. W. Hicks, J. M. White, "A Novel Sutureless Anastomotic Device

in a Swine Model: A Proof of Concept Study," **Journal of Surgical Research**, 291, 116-123 (2023).

60. **J. Li**[v], H. Zhang, F. Usta, Y. Chen, S. H. Kang, W. Zhou, "Multifunctional Architected MWCNTs/PDMS Composites with High Sensing and Energy Absorption Capability Inspired by Ant Tentacle and Pomelo Peel," **Journal of Materials Research and Technology**, 24, 9045-9057 (2023).

59. **M. Omar**, **B. Sun**, **G. Kitchen**, S. H. Kang*, "Mechanically adaptive composites through piezoelectricity", **Journal of Composite Materials**, 57, 575-580 (2023). (**invited**)

58. **H. Kim**[v], M. Goncalves, S. H. Kang*, B. M. Weon*, "High-density deposits of binary colloids," **Scientific Reports**, 12, 22307 (2022).

57. **A. Eisape**, V. Rennoll, J. E. West, S. H. Kang*, "Soft CNT-Polymer Composites for High Pressure Sensors," **Sensors**, 22, 5268 (2022).

56. H. Xun, ***C. Shallal***, J. Unger, **R. Tao**, A. Torres, M. Vladimirov, J. Frye, M. Singhala, B. Horne, P. Yesantharao, B. S. Kim, B. Burke, M. Montana, M. Talcott, B. Winters, M. Frisella, B. Kushner, J. M. Sacks, J. K. Guest, S. H. Kang, J. Caffrey, "Translational Design for Limited Resource Settings as Demonstrated by Vent-Lock, A 3D-Printed Ventilator Multiplexer," **3D Printing in Medicine**, 8, 29 (2022).

55. **G. Peng**[v], Y. Hu, G. Dou, Y. Sun, Y. Huan, S. H. Kang*, Z. Piao*, "Enhanced mechanical properties of epoxy composites embedded with MF/TiO_2 hybrid shell microcapsules containing n-octadecane," **Journal of Industrial and Engineering Chemistry**, 110, 414 (2022).

54. **S.-Y. Jeon**[+], **B. Shen**[+], N. A. Traugutt, **Z. Zhu, L. Fang**, C. M. Yakacki, T. D. Nguyen, S. H. Kang*, "Synergistic Energy Absorption Mechanisms of a Bistable Architected Liquid Crystal Elastomers," **Advanced Materials**, 2200272 (2022). ([+]: equal contribution)

53. **G. Oh**[v], **W. Jeong**[v], N. Jung, S. H. Kang, B. M. Weon, "Evaporation and deposition of colloidal binary droplets," **Physical Review Applied**, 17, 024010 (2022).

52. D. P. Mallela, S. Bose, ***C. Shallal***, E. Goldsborough, H. Xun[v], J. Chen[v], D. Stonko, G. Brandacher, J. Sacks, S. H. Kang, C. W. Hicks, "A systematic review of sutureless vascular anastomosis technologies," **Seminars in Vascular Surgery**, 34, 247 (2021).

51. **H. Xun**[v], S. Clarke, N. Baker, ***C. Shallal***, E. Lee, L. D. Fadavi, A. Wong, G. Brandachar, S. H. Kang, J. M. Sacks, "Method, Material and Machine: A Review of the Basic 3Ms for the Medical Professional Utilizing 3D Printing for Accelerated Device Production," **Journal of the American College of Surgeons**, 232, 726 (2021).

50. **L. Fang**, **Y. Yan**, O. Agarwal, J. E. Seppala, K. Migler, T. D. Nguyen, S. H. Kang*, "Estimations of the Effective Young's Modulus of Specimens Prepared by Fused Filament Fabrication," **Additive Manufacturing**, 42, 101983 (2021).

49. **B. Shen**, S. H. Kang*, "Designing Self-Oscillating Matter," **Matter**, 4, 766-769 (2021). (**invited**)

48. **M. Omar**[+], **B. Sun**[+], S. H. Kang*, "Good reactions for low-power shape-memory microactuators," **Science Robotics**, 6, eabh1560 (2021). ([+]: equal contribution) (**invited**)

47. U. Erturun, **A. Eisape,** S. H. Kang, J. E. West*, "Hybrid energy harvesting using piezoelectric nanogenerator and electrostatic generator," **Applied Physics Letters**, 118, 063902 (2021).

46. **L. Fang, Y. Yan,** O. Agarwal, **S. Yao**, J. E. Seppala*, S. H. Kang*, "Effects of Environmental Temperature and Humidity on the Geometry and Strength of Polycarbonate Specimens Prepared by Fused Filament Fabrication," **Materials**, 13, 4414 (2020). (**invited**)

45. **L. Fang**, **Y. Yan**, O. Agarwal, J. E. Seppala, K. J. Hemker, S. H. Kang*, "Processing-Structure-Property Relationships of bisphenol-A-Polycarbonate Samples Prepared by Fused Filament Fabrication," **Additive Manufacturing**, 35, 101285 (2020).

44. **S. Orrego**, **Z. Chen**, ***U. Krekora,*** **D. Hou**, **S.-Y Jeon**, M. Pittman, C. Montoya, Y. Chen, S. H. Kang*, "Bioinspired materials with self-adaptable mechanical properties," **Advanced Materials**, 32, 1906970 (2020).

43. **E. Bachtiar**, **O. Erol**, M. Millrod, **R. Tao**, D. H. Gracias, L. R. Romer, S. H. Kang*, "3D-printing and characterizations of a soft and biostable elastomer with high flexibility and strength for biomedical applications," **Journal of the Mechanical Behavior of Biomedical Materials**, 103649 (2020).

42. **J. Li**$^{\nu+}$*, **L. Fang**$^{+}$, **B. Sun**, X. Li, S. H. Kang*, "Recent progress in flexible and stretchable piezoresistive sensors and their applications," **Journal of The Electrochemical Society**, 167, 037561 (2020). ($^{+}$: equal contribution) (**invited**) – ***Received the IOP Publishing Top Cited Paper Award based on citation from 2020-2022***

41. **B. Shen**, **O. Erol**, **L. Fang**, S. H. Kang*, "Programming the Time into 3D Printing: Current Advances and Future Directions in 4D Printing," **Multifunctional Materials**, 3, 012001 (2020). (**invited**)

40. **S.-Y. Jeon**, S. H. Kang*, "Electrochemical reactions drive morphing of materials," **Nature**, 573, 198-199 (2019). (**invited**)

39. W.-H. Jung, **K. Elawad**, S. H. Kang, Y. Chen, "Cell-cell adhesion and myosin activity regulate cortical actin assembly in mammary gland epithelium on concaved surface," **Cells**, 8, 813 (2019).

38. A. Dagro, K. Ramesh, A. Venkatesan, S. H. Kang, **S. Orrego**, L. Rajbhandari, "Quantifying the local mechanical properties of cells in a fibrous three-dimensional microenvironment," **Biophysical Journal**, 117, 817-828 (2019).

37. Z. Jiang^{+}, **O. Erol**$^{+}$, D. Chatterjee^{+}, W. Xu, N. Hibino, L. H. Romer, S. H. Kang, and D. H. Gracias, "Direct Ink Writing of Poly(tetrafluoroethylene) (PTFE) with Tunable Mechanical Properties," **ACS Materials and Interfaces**, 11, 28289-28295 (2019). ($^{+}$: equal contribution)

36. J. Liu, **O. Erol**, A. Pantula, W. Liu , Z. Jiang, K. Kobayashi, D. Chatterjee, N. Hibino, L. H. Romer, S. H. Kang, T. D. Nguyen and D. H. Gracias, "Dual-gel 4D Printing of Bioinspired Tubes," **ACS Materials and Interfaces,** 11, 8492-8498 (2019).

35. **J. Li**$^{\nu}$, **S. Orrego**, **J. Pan**, **P. He**$^{\nu}$, S. H. Kang*, "Ultrasensitive, flexible, and low-cost nanoporous piezoresistive composite for tactile pressure sensing," **Nanoscale**, 11, 2779-2786 (2019).

34. **L. Fang**, **J. Li**$^{\nu}$, **Z. Zhu**, **S. Orrego**, and S. H. Kang*, "Piezoelectric polymer thin films with architected cuts," **Journal of Materials Research**, 33, 330-342 (2018).

33**. J. Li**$^{\nu}$, Z. Zhu, **L. Fang**, S. Guo, U. Erturun, **Z. Zhu**, J. E. West, S. Ghosh, S. H. Kang*, "Analytical, Numerical, and Experimental Studies of Viscoelastic Effects of Soft Piezoelectric Nanocomposites," **Nanoscale**, 9, 14215-14228 (2017).

32. **S. Chen, J. Li**$^{\nu}$**, L. Fang**, Z. Zhu$^{\nu}$, and S. H. Kang*, "Simple Triple-State Polymer Actuators with Controllable Folding Characteristics," **Applied Physics Letters**, 110, 133506 (2017).

31. **S. Orrego**, K. Shoele, A. Ruas, K. Doran, ***B. Caggiano***, R. Mittal*, and S. H. Kang*, "Harvesting Ambient Wind Energy with an Inverted Piezoelectric Flag," **Applied Energy**, 194, 212-222 (2017).

30. S. H. Kang* and Michel Dickey*, "Patterning via self-organization and self-folding: beyond conventional lithography," **Materials Research Society Bulletin**, 41, 93-96 (2016). (***guest editor of the theme issue*, *invited review***)

[papers based on the works before starting independent career and finished after joining Hopkins]

29. W. Wang, J. V. I. Timonen, A. Carlson, D.-M. Drotlef, C. T. Zhang, S. Kolle, A. Grinthal, T.-S. Wong, B. Hatton, S. H. Kang, S. Kennedy, J. Chi, R. Thomas Blough, M. Sitti, L. Mahadevan and J. Aizenberg, "Multifunctional ferrofluid-infused surfaces with reconfigurable multiscale topography," **Nature**, 559, 77–82 (2018).

28. N. Wadhwa, J. G. Chen, J. B. Sellon, D. Wei, M. Rubinstein, R. Ghaffari, D. M. Freeman, O. Buyukozturk, P. Wang, S. Sun, S. H. Kang, K. Bertoldi, F. Durand, and W. T. Freeman, "Motion microscopy for visualizing and quantifying small motions," **Proceedings of the National Academy of Sciences**, 114, 11639–11644 (2017).

27. P. Wang, Y. Zheng, M. C. Fernandes, Y. Sun, K. Xu, S. Sun, S. H. Kang, V. Tournat, and K. Bertoldi, "Harnessing Geometric Frustration to Form Band Gaps in Acoustic Networks," **Physical Review Letters**, 118, 084302 (2017).

26. Y. Zarate, S. Babaee, S. H. Kang, I. V. Shadrivov, D. N. Neshev, K. Bertoldi, David A. Powell, "Elastic Metamaterials for Tuning Circular Polarization of Electromagnetic Waves," **Scientific Reports**, 6, 28273 (2016).

25. J. Liu, T. Gu, S. Shan, S. H. Kang, J. C. Weaver, and K. Bertoldi, "Harnessing Buckling to Design Architected Materials That Exhibit Effective Negative Swelling," **Advanced Materials**, 28, 6619-6624 (2016).

24. S. Shan†, S. H. Kang†, J. R. Raney†, P. Wang, L. Fang, F. Candido, J. Lewis, and K. Bertoldi, "Multistable Architected Materials for Trapping Elastic Strain Energy," **Advanced Materials**, 27, 4296-4301 (2015). (†: equal contribution)

23. S. Shan, S. H. Kang, Z. Zhao, L. Fang, and K. Bertoldi, "Design of Planar Isotropic Negative Poisson's Ratio Structures," **Extreme Mechanics Letters**, 4, 96-102 (2015).

22. P. Wang, F. Casadei, S. H. Kang, and K. Bertoldi, "Locally Resonant Band Gaps in Periodic Beam Lattices by Tuning Connectivity," **Physical Review B**, 91, 020103(R) (2015). (Rapid Communications)

[papers before starting independent career]

21. S. H. Kang, S. Shan, A. Kosmrlj, W. L. Noorduin, S. Shian, J. C. Weaver, D. R. Clarke, and K. Bertoldi, "Complex Ordered Patterns in Mechanical Instability Induced Geometrically Frustrated Triangular Cellular Structures," **Physical Review Letters**, 112, 09870 (2014).

20. S. Shan, S. H. Kang, P. Wang, C. Qu, S. Shian, E. R. Chen, J. C. Weaver, and K. Bertoldi, "Harnessing Multiple Folding Mechanisms in Soft Periodic and Porous Structures to Design Highly Tunable Phononic Crystals," **Advanced Functional Materials**, 24, 4935 (2014).

19. J. Shim, S. Shan, A. Kosmrlj, S. H. Kang, E. R. Chen, J. C. Weaver, and K. Bertoldi, "Harnessing Instabilities for Design of Soft Reconfigurable Auxetic/Chiral Materials," **Soft Matter**, 9, 8198-8202 (2013).

18. S. H. Kang†, S. Shan†, W. Noorduin†, M. Khan, J. Aizenberg, and K. Bertoldi, "Buckling-Induced Reversible Symmetry Breaking and Chiral Amplification Using Supported Cellular Structures," **Advanced Materials**, 25, 3380-3385 (2013). (†: equal contribution)

17. A. Grinthal, S. H. Kang, A. K. Epstein, M. Aizenberg, M. Khan, and J. Aizenberg, "Steering Nanofibers: An Integrative Approach to Bio-Inspired Fiber Fabrication and Assembly," **Nano Today**, 7, 35-52 (2012). (invited review)

16. S. H. Kang, N. Wu, A. Grinthal, and J. Aizenberg, "Meniscus Lithography: Evaporation-Induced Self-Organization of Pillar Arrays into Moiré Patterns," **Physical Review Letters**, 107, 177802 (2011).

15. T.-S. Wong, S. H. Kang, S. K. Y. Tang, E. J. Smythe, B. D. Hatton, A. Grinthal, and J. Aizenberg, "Bioinspired Self-Repairing Slippery Surfaces with Pressure-Stable Omniphobicity," **Nature**, 477, 443-447 (2011).

14. A. Seminara, B. Pokroy, S. H. Kang, M. P. Brenner, and J. Aizenberg, "On the Mechanism of Nanostructure Movement under Electron Beam and Its Application in Patterning," **Physical Review B**, 83, 235438 (2011).

13. D. J. Lipomi, R. V. Martinez, M. A. Kats, S. H. Kang, P. Kim, J. Aizenberg, F. Capasso, and G. M. Whitesides, "Patterning the Tips of Optical Fibers with Metallic Nanostructures Using Nanoskiving," **Nano Letters**, 11, 632-636 (2011).

12. S. H. Kang, B. Pokroy, L. Mahadevan, and J. Aizenberg, "Control of Shape and Size of Nanopillar Assembly by Adhesion-Mediated Elastocapillary Interaction," **ACS Nano**, 11, 6323-6331 (2010).

11. B. Pokroy, B. Aichmayer, A. S. Schenk, B. Haimov, S. H. Kang, P. Fratzl, and J. Aizenberg, "Sonication-Assisted Synthesis of Large, High-Quality Mercury-Thiolate Single Crystals Directly from Liquid Mercury," **Journal of the American Chemical Society**, 132, 14355-14357 (2010).

10. D. J. Lipomi, M. A. Kats, P. Kim, S. H. Kang, J. Aizenberg, F. Capasso, and G. M. Whitesides, "Fabrication and Replication of Arrays of Single- or Multi-Component Nanostructures by Replica Molding and Mechanical Sectioning," **ACS Nano**, 4, 4017-4026 (2010).

9. B. Pokroy, S. H. Kang, L. Mahadevan, and J. Aizenberg, "Self-Organization of a Mesoscale Bristle into Ordered, Hierarchical Helical Assemblies," **Science**, 323, 237-240 (2009).

8. K. C. Mandal, S. H. Kang, M. Choi, J. Chen, X.-C. Zhang, J. M. Schleicher, C. A. Schmuttenmaer, and N. C. Fernelius, "III–VI Chalcogenide Semiconductor Crystals for Broadband Tunable THz Sources and Sensors," **IEEE Journal of Selected Topics in Quantum Electronics**, 14, 284-288 (2008).

7. K. C. Mandal, S. H. Kang, M. Choi, R. David Rauh, "Rare-Earth Doped Potassium Lead Bromide Mid-IR Laser Sources for Standoff Detection," **International Journal of High Speed Electronics and Systems**, 18, 735 (2008).

6. K. C. Mandal, S. H. Kang, M. Choi, A. Kargar, M. J. Harrison, D. S. McGregor, A. E. Bolotnikov, G. A. Carini, G. C. Camarda, and R. B. James, "Characterization of Low-Defect $Cd_{0.9}Zn_{0.1}Te$ and CdTe Crystals for High-Performance Frisch Collar Detectors," **IEEE Transactions on Nuclear Science**, 54, 802-806 (2007).

5. K. C. Mandal, S. H. Kang, M. Choi, J. Wei, L. Zheng, H. Zhang, G. E. Jellison, M. Groza, A. Burger, "Component Overpressure Growth and Characterization of High Resistivity CdTe Crystals for Radiation Detectors," **Journal of Electronic Materials**, 36, 1013-1020 (2007).

4. J. Chen, V. Leblanc, S. H. Kang. P. J. Benning, D. Shut, M. A. Baldo, M. A. Schmidt, and V. Bulović, "High Definition Digital Fabrication of Active Organic Devices by Molecular Jet Printing," **Advanced Functional Materials**, 17, 2722-2727 (2007).

3. V. Leblanc, J. Chen, S. H. Kang, V. Bulović, and M. A. Schmidt, "Micromachined Printheads for the

Evaporative Patterning of Organic Materials and Metals," **Journal of Microelectromechanical Systems**, 16, 394-400 (2007).

2. K. C. Mandal, S. H. Kang, M. Choi, J. Bello, L. Zheng, H. Zhang, M. Groza, U. N. Roy, A. Burger, G. E. Jellison, D. E. Holcomb, G. W. Wright, J. A. Williams, "Simulation, Modeling, and Crystal Growth of $Cd_{0.9}Zn_{0.1}Te$ for Nuclear Spectrometers," **Journal of Electronic Materials**, 35, 1251-1256 (2006).

1. S. H. Kang, T. Crisp, I. Kymissis, and V. Bulović, "Memory Effect from Charge Trapping in Layered Organic Structures," **Applied Physics Letters**, 85, 4666-4668 (2004).

BOOK CHAPTER

1. **A. Eisape, B. Sun,** J. Li[v], S. H. Kang*, "Nanoporous composite sensors", book chapter for **Nanoporous Carbons for Soft and Flexible Energy Devices**, Springer, 2022. https://doi.org/10.1007/978-3-030-81827-2

PATENTS (8 patents, 3 pending patents, and 6 invention disclosures)

"Slippery Surfaces with High Pressure Stability, Optical Transparency, and Self-Healing Characteristics," J. Aizenberg, M. Aizenberg, S. H. Kang, P. Kim, T. S. Wong, U.S. Patent No. 9,121,306 (2015), 9,353,646 (2016), 9,932,482 (2018).

"Sanitization Systems and Components Thereof Having a Slippery Surface," J. Aizenberg, M. Aizenberg, S. H. Kang, P. Kim, T. S. Wong, U.S. Patent No. 10,450,467 (2021).

"Anti-Counterfeiting Methods," J. Aizenberg, T. S. Wong, S. H. Kang, X. He, U.S. Patent No. 9,937,743 (2018).

"Containers, Bottles, Drums, Vats, and Tanks Having a Slippery Surface," J. Aizenberg, M. Aizenberg, S. H. Kang, P. Kim, T. S. Wong, U.S. Patent No. 10,233,334 (2019).

"Biomimetic Self-Adaptable Systems," S. H. Kang, S. Orrego, US Patent No. 11,753,765 B2 (2023).

"Flexible and Hybrid Energy Harvesting Device Combining Piezoelectric and Electrostatic Conversions," A. Elsape, U. Erturun, S. H. Kang, J. West, US Patent No. 11,870,372 (2024).

"Shape Recoverable and Reusable Energy Absorbing Structures, Systems and Methods for Manufacture Thereof," S. H. Kang, K. Bertoldi, J. R. Raney, J. A. Lewis, S. Sicong, U.S. Provisional Patent Application No. PCT/US2015/27385, filed in April 2015.

"Anastomotic Coupling Device," H. Xun, J. Sacks, C. Hicks, S. H. Kang, G. Brandacher, C. Shallal, U.S. Provisional Patent Application No. PCT/048317-593001WO, filed in July 2021.

"Fluoropolymer Shear-Thinning Inks and Methods of Making and Using Same," D. Chatterjee, O. Erol, D. Gracias, N. Hibino, Z. Jiang, S. H. Kang, L. Romer, US Patent Application No. 17/604,648, filed in October 2021.

"Vent-Lock: A Safer Ventilator Splitter for Better Breathing," S. H. Kang, H. Xun, J. Caffrey, B. Winters, J. K. Guest, A. Sapirstein, J. S. Unger, C. C. Shallal, M. Vladimirov, R. Tao, disclosed in April 2020.

"Drain-Lock: A Sutureless Device to Secure Surgical Drains," S. H. Kang, J. Sacks, R. Tao, H. Xun, disclosed in November 2019.

"Uro-Lock: A Sutureless, Catheterless Urethrovesical Anastomosis for Radical Prostatectomy," M. Allaf, S. H. Kang, J. Sacks, H. Xun, disclosed in November 2019.

"Shape-Changing Implants for Pediatrics," S. H. Kang, D. H. Gracias, L. Romer, N. Hibino, G. O. Erol, disclosed in October 2018.

"3D Printing of Thermoplastic Silicone-Carbonate-Polyurethane Copolymer," E. Bachtiar, S. H. Kang, disclosed in June 2018.

"Tunable Thin-Film Acoustic Sensor, Manufacturing Methods, and Processing Algorithms," I. McLane, J. E. West, D. Emmanoulidou, M. Elhilali, V. Rennoll, U. Erturun, S. Orrego, S. H. Kang, disclosed in June 2017.

INVITED PRESENTATIONS

142. "Bone-inspired multiphase composites with self-adaptive behaviors," The 26th International Congress of Theoretical and Applied Mechanics (ICTAM 2024), Daegu, Korea, August 2024.

141. "Extreme materials for resilient and sustainable future," Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology (virtual), February 2024.

140. "Bone-inspired self-reconfigurable materials for resilient and sustainable future," Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, November 2023.

139. "Bone-inspired composites with self-adaptable mechanical properties and rose prickle-inspired sutureless anastomosis devices," Department of Mechanical Engineering, Seoul National University, Seoul, Korea, November 2023.

138. "Bone-inspired materials for resilient and sustainable future," Department of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon, Korea, November 2023.

137. "Extreme materials and structures for resilient and sustainable future," Department of Mechanical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea, November 2023.

136. "Bone-inspired materials with self-adaptable mechanical properties and rose prickle-inspired sutureless anastomosis devices," Korea Institute of Machinery and Materials, Daejeon, Korea, November 2023.

135. "Bone-inspired self-reconfigurable materials for resilient and sustainable future," Korea Institute of Science and Technology, Seoul, Korea, November 2023.

134. "Toward a sustainable and resilient future through bioinspired materials and devices," Carnegie Mellon University, Pittsburgh, PA, October 2023. (virtual)

133. "Development of biomaterials for medical applications," Tecnológico de Monterrey, Ciudad de México, Mexico City, Mexico, August 2023. (virtual)

132. "Synergistic Energy Absorption of Architected Liquid Crystal Elastomers," 17th U. S. National Congress on Computational Mechanics, Albuquerque, NM, July 2023.

131. "Bone-inspired materials with self-adaptive mechanical behaviors and damage mitigation," 8th International Conference on Bio-Inspiration, Nice, France, June 2023. (**Keynote**)

130. "Bone-inspired materials with self-adaptable mechanical properties and damage mitigation," Department of Materials, ETH Zurich, Zurich, Switzerland, June 2023.

129. “Mechanically Adaptive Materials and Structures by Coupled Mechanical Systems,” Department of Mechanical and Process Engineering, ETH Zurich, Zurich, Switzerland, June 2023.

128. “Ultrasensitive Low Cost Flexible Sensors and Bioinspired Sutureless Anastomosis Devices,” The 243rd Electrochemical Society Meeting, Boston, MA, May 2023.

127. “Bone-inspired materials with self-adaptable mechanical properties and architected materials with adaptive energy absorption,” Department of Bionano Engineering, Hanyang University, Ansan, Korea, May 2023.

126. “Bone-inspired materials with self-adaptable mechanical properties and rose prickle-inspired sutureless anastomosis devices,” Department of Chemical and Biomolecular Engineering, Sogang University, Seoul, Korea, May 2023.

125. “Bio-inspired materials with self-adaptable mechanical properties and damage mitigation,” Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, May 2023.

124. “Toward a resilient and sustainable future through coupled mechanical systems,” Department of Mechanical Engineering, Seoul National University, Seoul, Korea, May 2023.

123. “Bone-inspired materials with self-adaptable mechanical properties and rose prickle-inspired sutureless anastomosis devices,” Department of Mechanical Systems Engineering, Sookmyung Women’s University, Seoul, Korea, May 2023.

122. “Mechanically Adaptive Materials and Structures by Coupled Mechanical Systems,” Korea Institute of Machinery & Materials, Daejeon, Korea, May 2023.

121. “Bio-inspired materials with self-adaptable mechanical properties and damage mitigation,” School of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon, Korea, May 2023.

120. “Bioinspired Coupled Fluid- Solid Systems for Self-Adaptable Mechanical Behaviors,” Department of Mechanical Engineering, Korea University, Korea, May 2023.

119. “Mechanically adaptive materials,” Korea Institute of Science and Technology, May 2023.

118. “Multiscale Synergistic Energy Absorption Behaviors of Architected Liquid Crystal Elastomers,” IEEE-NEMS 2023: The 18th International Conference on Nano/Micro Engineered and Molecular Systems, Jeju, Korea, May 2023.

117. “Mechanically Adaptive Materials,” Department of Materials Science and Engineering, Pohang University of Science and Technology, Pohang, Korea, April 2023. (virtual)

116. “Mechanically Adaptive Materials and Structures by Coupled Mechanical Systems,” Department of Mechanical Engineering, George Mason University, Fairfax, VA, February 2023.

115. “Avian Bone-Inspired Lightweight Self-Adapting and Damage-Mitigating Materials,” The 6th Multifunctional Materials for Defense Workshop, Arlington, VA, December 2022.

114. “Intelligent Materials for Dynamically Changing Environments,” School of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon, Korea, November 2022.

113. “Bioinspired Sutureless Anastomosis Devices,” Chung-Ang University Hospital, Seoul, Korea, November 2022.

112. “Architected Liquid Crystal Elastomers with Synergistic Energy Absorption,” ENGE2022, Jeju, Korea,

November 2022.

111. “Multifunctional Materials with Self-Adaptable Mechanical Properties and Damage-Mitigation and Architected Materials with Extreme Energy and Sound Absorption,” Department of Aerospace Engineering, University of Illinois, Urbana-Champaign, IL, October 2022.

110. “Bio-Inspired Materials with Self-Adaptable Mechanical Properties and Architected Materials with Extreme Energy Absorption & Deep Subwavelength Sound Absorption,” Department of Mechanical and Aerospace Engineering, North Carolina State University, Raleigh, NC, October 2022.

109. “Bio-Inspired Materials with Self-Adaptable Mechanical Properties and Architected Materials with Extreme Energy Absorption & Deep Subwavelength Sound Absorption,” Department of Mechanical and Industrial Engineering, Northeastern University, Boston, MA, October 2022.

108. “Bio-Inspired Materials with Self-Adaptable Mechanical Properties and Architected Materials with Extreme Energy Absorption & Deep Subwavelength Sound Absorption,” Department of Mechanical Engineering, Pennsylvania State University, University Park, October 2022.

107. “Bio-Inspired Materials with Self-Adaptable Mechanical Behaviors and Architected Materials with Extreme Energy Absorption & Deep Subwavelength Sound Absorption,” Department of Materials Science and Engineering, University of California, Irvine, CA, October 2022.

106. “Bio-Inspired Multifunctional Materials with Self-Adaptable Mechanical Behaviors and Architected Materials with Extreme Energy Absorption & Deep Subwavelength Sound Absorption,” Department of Mechanical Engineering, University of California, Irvine, CA, October 2022.

105. “Bio-Inspired Materials with Self-Adaptable Mechanical Behaviors and Architected Materials with Extreme Energy Absorption & Deep Subwavelength Sound Absorption,” Department of Mechanical Engineering, University of California, Berkeley, CA, September 2022.

104. “Self-Adaptive Materials and Structures for Aerospace Applications,” **Gordon Research Conference (Multifunctional Materials and Structures)**, Ventura, CA, September 2022.

103. “Bio-Inspired Materials with Self-Adaptable Mechanical Behaviors and Architected Materials with Extreme Energy Absorption & Deep Subwavelength Sound Absorption,” Department of Mechanical and Aerospace Engineering, University of California, Los Angeles, CA, September 2022.

102. “Bio-inspired materials with self-adaptable mechanical behaviors and architected materials with extreme energy absorption & deep subwavelength sound absorption,” School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, September 2022.

101. “Bio-inspired materials with self-adaptable mechanical behaviors and architected materials with extreme energy absorption & deep subwavelength sound absorption,” Department of Mechanical Engineering, University of Alabama, Tuscaloosa, AL, September 2022.

100. “Bioinspired multifunctional materials with self-adaptable mechanical properties and architected materials with adaptive energy absorption and extreme sound absorption,” Department of Mechanical Engineering, National University of Singapore, Singapore, July 2022.

99. “Bioinspired materials and devices for healthcare,” Stryker, Inc., Leesburgh, VA, July 2022.

98. “Synergistic energy absorption of liquid crystal elastomer meta-structures by coupling nonlinear deformation with viscoelastic properties,” Society for Industrial and Applied Mathematics, Pittsburgh, PA, July 2022.

97. “Bioinspired Composites with Self-Adaptable Mechanical Properties and Damage-Mitigation and Architected Liquid Crystal Elastomers with Synergistic Energy Absorption,” KIST Jeonbuk Institute of Advanced Composite Materials, Wanju-Gun, Korea, July 2022.

96. “Multifunctional materials with self-adaptable mechanical properties and damage mitigation and 3D printing of PTFE with tunable mechanical properties,” Chemical Division, Hanwha Solutions, Daejeon, Korea, July 2022.

95. “Multifunctional materials with self-adaptable mechanical properties, 3D printing of PTFE with tunable mechanical properties and architected materials with tunable, stretchable and conformal sound absorber,” Advanced Materials Division, Hanwha Solutions, Sejong, Korea, June 2022.

94. “Multifunctional Materials with Self-Adaptable Mechanical Properties and Damage-Mitigation and Architected Liquid Crystal Elastomers with Synergistic Energy Absorption,” Department of Polymer Science and Engineering, Pusan National University, Pusan, Korea, June 2022.

93. “Multifunctional Materials with Self-Adaptable Mechanical Properties and Damage-Mitigation,” Department of Mechanical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea, June 2022.

92. “Bone-Inspired Self-Adaptable Materials,” Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, June 2022.

91. “Multifunctional Materials with Self-Adaptable Mechanical Properties and Damage-Mitigation and Architected Materials with Extreme Sound Absorption,” Department of Mechanical Engineering, Seoul National University, Seoul, Korea, June 2022.

90. “Bio-inspired materials with adaptive damage mitigation and architected materials with extreme energy absorption,” Korea Institute of Science and Technology, June 2022.

89. “Bone-inspired materials with self-adaptable mechanical properties & bio-inspired “growing” cardiovascular implants and sutureless anastomosis devices,” Department of Biomedical Engineering, Ulsan National Institute of Science and Technology, Ulsan, Korea, June 2022.

88. “Bio-inspired materials with self-adaptable mechanical properties and architected materials with extreme energy absorption & deep subwavelength sound absorption,” School of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon, Korea, June 2022.

87. “Multifunctional materials with self-adaptive mechanical properties and 3D printing of PTFE with tunable mechanical properties,” Hanwha Total Solutions (virtual), June 2022. (**2022 Hanwha Non-Tenured Faculty Award Presentation**)

86. “Bio-inspired multifunctional materials with self-adaptable mechanical properties & damage mitigation and architected materials with adaptive & extreme energy absorption,” Johns Hopkins Applied Physics Laboratory, Laurel, MD, June 2022.

85. “Bio-inspired composites with self-reinforcing mechanical properties & damage mitigation and architected materials with adaptive and extreme energy absorption,” NASA Goddard Space Flight Center Engineering Colloquium, Greenbelt, MD, May 2022.

84. “Bioinspired Multifunctional Materials with Self-Adaptable Mechanical Properties and Damage-Mitigation,” 2022 Spring Materials Research Society Meeting, Honolulu, HI, May 2022.

83. “Bone-inspired multifunctional materials with self-adaptable mechanical properties & damage mitigation and architected materials with adaptive energy absorption,” Department of Mechanical and Aerospace Engineering, University of Virginia, Charlottesville, VA, April 2022.

82. “Bioinspired materials with self-adaptable mechanical properties and damage mitigation and architected materials with adaptive energy absorption,” Department of Materials Science and Engineering, Technion – Israel Institute of Technology, Haifa, Israel, April 2022.

81. “Bio-inspired materials with self-adaptable mechanical properties & damage mitigation and architected materials with adaptive energy absorption,” School of Advanced Materials Science and Engineering, Sungkyunkwan University, March 2022. (virtual)

80. “Bone-inspired multifunctional materials with self-adaptable mechanical properties & damage mitigation and architected materials with adaptive energy absorption,” Department of Mechanical Engineering, Northwestern University, Evanston, IL, February 2022.

79. “Shape-Changing Cardiovascular Devices to Accommodate Growth of Pediatric Patients,” The US-KOREA Conference on Science, Technology, and Entrepreneurship (UKC) 2021, December 2021.

78. “Bioinspired materials with self-adaptable mechanical properties and mechanical metamaterials with adaptive energy absorption,” Department of Mechanical Systems Engineering, Sookmyung Women’s University, Seoul, Korea, November 2021.

77. “Bioinspired materials with self-adaptable mechanical properties and damage mitigation and metamaterials with adaptive energy absorption,” Department of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon, Korea, November 2021.

76. “Bioinspired multifunctional materials with self-adaptable mechanical properties and metamaterials with adaptive energy absorption,” Department of Mechanical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea, November 2021.

75. “Self-adaptable materials: Bio-inspired multifunctional materials with self-adaptable mechanical properties and architected materials with adaptive energy absorption,” Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea, November 2021.

74. “Bioinspired materials with self-adaptable mechanical properties and damage mitigation and mechanical metamaterials with adaptive energy absorption,” Korea Institute of Science and Technology, Seoul, Korea, November 2021.

73. “Bioinspired multifunctional materials with self-adaptable mechanical properties and metamaterials with adaptive energy absorption,” Department of Mechanical Engineering, Seoul National University, Seoul, Korea, November 2021.

72. “Bioinspired materials with self-adaptive mechanical properties,” Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, November 2021.

71. “Bioinspired multifunctional materials with self-adaptable mechanical properties and architected materials with adaptive energy absorption,” Department of Mechanical Engineering, Pohang University of Science and Technology, Pohang, November 2021.

70. “Self-adaptive materials, structures and devices,” Department of Mechanical Engineering, Johns Hopkins University, Baltimore, MD, September 2021.

69. “Bioinspired Synthesis of Multifunctional Materials with Self-Adaptable Mechanical Properties and Self-Regeneration,” ASC 36th Annual Technical Virtual Conference Tri-Agency AFOSR-ARO-ONR Symposium (virtual), September 2021.

68. “Self-adaptive materials, structures and programmable materials,” Air Force Research Laboratory, Dayton, OH, August 2021.

67. “Self-adaptive materials, structures and devices,” Department of Mechanical and Aerospace Engineering, Ohio State University, Columbus, OH, February 2021.

66. “Self-adaptive materials, structures and devices,” Department of Mechanical Engineering, Villanova University, Villanova, PA, November 2020.

65. “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials & medical devices,” Department of Mechanical Engineering, University of Wisconsin, Madison, WI, October 2020.

64. “Self-adaptive materials, structures and devices,” Air Force Research Laboratory, Dayton, OH, July 2020.

63. “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials & medical devices,” School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, February 2020.

62. “Bioinspired self-adaptable materials and “growing” cardiovascular implants,” College of Engineering, Michigan State University, East Lansing, MI, February 2020.

61. “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA, February 2020.

60. “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Mechanical Engineering, University of South Carolina, Columbia, SC, February 2020.

59. “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Mechanical Engineering, University of Utah, Salt Lake City, UT, November 2019.

58. “Bioinspired Multifunctional Materials and Devices with Self-Adaptability by Harnessing Mechanics,” ASME International Mechanical Engineering Congress and Exposition, Salt Lake City, UT, November 2019.

57. “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Mechanical Engineering, McGill University, Montreal, Canada, October 2019.

56. “Harnessing fluid-structure interactions to utilize ambient wind energy for self-powered devices,” Biofuels - 2019, Toronto, Canada, October 2019.

55. “Self-adaptable material systems inspired by bone,” 56 Annual Technical Meeting of the Society of Engineering Science, St. Louis, MO, October 2019. (**Symposium keynote presentation**)

54. “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” School of Mechanical Engineering, Purdue University, West Lafayette, IN, September 2019.

53. “Metamaterials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Physics, University of North Texas, Dallas, TX, September 2019.

52. “Bioinspired Synthesis of Multifunctional Materials with Self-Adaptable Mechanical Properties and Regeneration,” The 5th “Multifunctional Materials for Defense” Workshop, Arlington, VA, August 2019.

51. “Bioinspired Materials with Self-Adaptable Mechanical Properties and Regeneration Capability,” China-America Frontiers of Engineering Symposium, San Diego, CA, June 2019.

50. “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Air Force Research Laboratory, Dayton, OH, April 2019.

49. “Bioinspired self-adaptable materials and architected materials with adaptive energy absorption,” Department of Materials Science and Engineering, University of California, Los Angeles, CA, April 2019.

48. “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Mechanical and Civil Engineering, California Institute of Technology, Pasadena, CA, April 2019.

47. “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” HRL Laboratories, Malibu, CA, April 2019.

46. “Architected materials with adaptive energy absorption and self-adaptable cardiovascular implants,” Department of Mechanical and Aerospace Engineering, University of California, Los Angeles, CA, April 2019.

45. “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Mechanical and Aerospace Engineering, University of California, San Diego, CA, April 2019.

44. “Bioinspired self-adaptable materials and architected materials with adaptive energy absorption,” Department of Materials Science and Engineering, University of California, Irvine, CA, April 2019.

43. “Bioinspired self-adaptable implant devices and materials,” Johns Hopkins University Department of Medicine/Whiting School of Engineering Research Retreat, Baltimore, MD, March 2019 (**Award presentation**).

42. “Bioinspired self-adaptable materials and ultrasensitive low-cost nanoporous composites,” Johns Hopkins Applied Physics Laboratory, Laurel, MD, January 2019.

41. “Bioinspired “growing” cardiovascular implant devices by 3D printing,” The 12th IEEE Int. Conf. on Nano/Molecular Medicine and Engineering (IEEE-NANOMED 2018), Honolulu, HI, December 2018.

40. “Bioinspired self-adaptable materials and “growing” cardiovascular implant devices,” Department of Mechanical and Materials Engineering, Duke University, Durham, NC, October 2018.

39. “Bioinspired self-adaptable materials and “growing” cardiovascular implant devices,” Department Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC, October 2018.

38. “Bioinspired materials that can sense and adapt to mechanical Loadings and damages,” First International Conference on 4D Materials and Systems, The Electrochemical Society, Yonezawa, Japan, August 2018.

37. “Bioinspired self-adaptable materials and “growing” cardiovascular implant devices,” Department of Mechanical Engineering, Seoul National University, Seoul, Korea, August 2018.

36. “Bioinspired self-adaptable materials and implant devices,” Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, August 2018.

35. “Mechanical metamaterials for tunable elastic wave propagation and reversible energy absorption by harnessing deformation behaviors of soft periodic structures,” Korea Institute of Machinery & Materials, Daejeon, Korea, August 2018.

34. “Bioinspired self-adaptable materials and “growing” cardiovascular implant devices,” Department of Mechanical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea, August 2018.

33. “Ultrasensitive Low-Cost Nanoporous Composites with a Wide Pressure Sensing Range for Tactile Sensors,” International Union of Materials Research, Daejeon, Korea, August 2018.

32. “Bioinspired self-adaptable materials and implant devices,” Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, April 2018.

31. “Bioinspired materials with self-adaptable mechanical properties and self-regeneration,” 5th Young Scientist Workshop, Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, February 2018.

30. “Synthesis of polymeric composites for ultrasensitive low-cost sensors and bone-inspired materials with self-adaptable mechanical properties and self-healing,” School of Chemical Engineering, Sungkyunkwan University, Suwon, Korea, November 2017.

29. “Harnessing behaviors of piezoelectric polymer composites for enhancing charge generation and bone-inspired materials with self-adaptable mechanical properties and self-healing,” Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, November 2017.

28. “Synthesis of polymer composites for ultrasensitive low-cost sensors and bone-inspired materials with self-regulating mechanical properties,” Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea, November 2017.

27. “Ultrasensitive low-cost tactile sensors and bioinspired mineralized scaffolds with self-adaptable mechanical properties and self-regeneration,” Department of Bio and Brain Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea, November 2017.

26. “Harnessing behaviors of polymer composites for ultrasensitive low-cost sensors and bone-inspired materials with self-regulating mechanical properties,” Department of Materials Science and Engineering, Pohang University of Science and Technology, Pohang, Korea, November 2017.

25. “Architected materials for tunable elastic wave propagation and reversible energy absorption,” Korea Institute of Science and Technology, Seoul, Korea, November 2017.

24. “Harnessing behaviors of piezoelectric polymer composites for enhancing charge generation and bone-inspired materials with self-adaptable mechanical properties and self-healing,” College of Engineering and Applied Science, University of Colorado-Denver, Denver, CO, October 2017

23. “Design, Fabrication, and Characterization of Architected Materials for Energy Absorption and Vibration Propagation Control,” Department of Mechanical Engineering, University of Maryland, Baltimore County, Baltimore, MD, December 2016.

22. “The Future of Vibration Energy Transfer in Solids and Structures: Needs and Opportunities,” Army Research Office Invited Workshop on the Future of Vibration Energy Transfer in Solids and Structures: Needs and Opportunities, Seattle, WA, October 2016.

21. “Design, Fabrication, and Characterization of Architected Materials for Energy Absorption and Vibration Propagation Control,” Department of Mechanical and Manufacturing Engineering, University of Calgary, Calgary, AB, Canada, October 2016.

20. “Steering Behaviors of 3D Printed Materials and Structures,” The United States Army Research Laboratory, Aberdeen, MD, August 2016.

19. “Design, Fabrication, and Characterization of Architected Materials for Energy Absorption and Tunable Vibration Propagation,” Under Armour, Baltimore, MD, July 2016.

18. “Design, Fabrication, and Characterization of Architected Materials for Tunable Wave Propagation and Shape-Recoverable Energy-Absorption,” Department of Mechanical and Materials Engineering, Portland State University, Portland, OR, May 2016.

17. “Architected Materials for Tunable Elastic Wave Propagation and Reversible Energy Absorption,” Department of Mechanical Engineering, Stony Brook University, Stony Brook, NY, May 2016.

16. “Steering Interactions between Bioinspired Polymeric Fibrous Structures and Fluids,” National Institute of Standards and Technology, Gaithersburg, MD, June 2015.

15. “3D Technologies and Their Applications for Architected Materials,” Greater Baltimore Committee Education and Workforce, Baltimore, MD, May 2015.

14. “Steering Evaporation-Induced Self-Assembly of Nanopost Arrays by Interplay between Mechanics and Surface Chemistry,” Foundations of Nanoscience, Snowbird, UT, April 2015.

13. “Design, Fabrication and Characterization of Architected Materials for Tunable Wave Propagation and Shape-Recoverable Energy-Absorption,” 2015 Mach Conference, Annapolis, MD, April 2015. **(keynote presentation of a session)**

12. “Harnessing Soft Materials for Functionality through Deformation and Instability,” 4th EITA Young Investigator Conference, Cambridge, MA, August 2015.

11. “Harnessing Deformation and Instability of Soft Structured Materials for Tunable Structures and Devices,” Department of Aeronautics and Astronautics, University of Washington, Seattle, WA, February 2015.

10. S. H. Kang and K. Bertoldi, “Soft Structured Materials: Functionality through Deformation and Instability,” Materials Research Society Meeting, San Francisco, CA, April 2014.

9. “Steering Structured Surfaces: Harnessing Geometry, Mechanical and Surface Properties to Form Complex Functional Patterns by Self-Organization,” Department of Mechanical and Industrial Engineering, University of Illinois, Chicago, IL, April 2014.

8. “Steering Structured Surfaces: Harnessing Geometry, Mechanical and Surface Properties to Form Complex Functional Patterns by Self-Organization,” Department of Mechanical Engineering, Virginia Polytechnic Institute and State University, Blacksburg, VA, April 2014.

7. “Steering Materials and Structures Under Extreme Conditions: Harnessing Geometry, Mechanical and Surface Properties to Form Complex Functional Patterns by Self-Organization,” Department of Mechanical Engineering, Johns Hopkins University, Baltimore, MD, March 2014.

6. “Steering Structured Surfaces: Harnessing Geometry, Mechanical and Surface Properties to Form Complex Functional Patterns by Self-Organization,” Department of Mechanical Engineering, University of Connecticut, Storrs, CT, February 2014.

5. “Self-Organization of Bioinspired Structured Surfaces by Interaction with Liquid,” Seoul National University, Seoul, Korea, July 2013.

4. “Harnessing Pattern Formation by Interaction between Liquid and Bioinspired Structured Surfaces,” Korea Institute of Science and Technology, Seoul, Korea, July 2013.

3. S. H. Kang, B. Pokroy, L. Mahadevan, and J. Aizenberg, “Evaporation-Induced Self-Organization of Polymer Nanorod Arrays: When Structured Solids Met a Liquid,” Society of Engineering Science 49th Annual Technical Meeting, Atlanta, GA, October 2012.

2. S. H. Kang and J. Aizenberg, "Steering Nanostructures: Controlling Self-Assembly of Bio-inspired Nanofibers," American Chemical Society Spring Meeting, San Diego, CA, March 2012.

1. S. H. Kang, B. Pokroy, L. Mahadevan, and J. Aizenberg, "Shape and Size Control of Polymer Nanopost Assembly by Adhesion-Mediated Elastocapillary Interaction: Interplay between Mechanics and Surface Science," Gordon-Kenan Research Seminar (Adhesion), Lewinston, ME, July 2011.

CONTRIBUTED PRESENTATIONS

71. S. H. Kang, "Bone-inspired self-reconfigurable materials for sustainable future," Gordon Research Conference, Complex Active and Adaptive Material Systems, Ventura, CA, January 2024.

70. S. H. Kang, "Bio-inspired materials with self-adaptable mechanical properties and damage-mitigation," Gordon Research Conference, Complex Active and Adaptive Material Systems, Ventura, CA, January 2023.

69. S. H. Kang, "Bioinspired materials with self-adaptable mechanical properties and damage mitigation," ENGE2022, Jeju, Korea, November 2022.

68. S. H. Kang, "Investigation of 3D printing of soft materials based on microstructural and mechanical characterizations," Gordon Research Conference, Additive Manufacturing, Ventura, CA, August 2022.

67. S. H. Kang, "Bioinspired multifunctional materials with self-adaptable mechanical properties and damage-mitigation," 18th European Mechanics of Materials Conference, Oxford, UK, April 2022.

66. **F. Ding, R. Tao**, **E. Bachtiar**, **A. Horowitz**, L. H. Romer, D. H. Gracias, and S. H. Kang, "3D-Printed "Growing" Cardiovascular Implants for Pediatric Patients with Congenital Heart Defects," 2021 Materials Research Society Fall Meeting, Boston, MA, December 1, 2021.

65. **S. Orrego**, **Z. Chen**, ***U. Krekora***, **D. Hou**, **S.-Y. Jeon**, M. Pittman, C. Montoya, S. H. Kang, "Bioinspired Materials with Dynamically Adaptive Mechanical Properties and Damage Mitigation," 2021 Materials Research Society Fall Meeting, Boston, MA, December 1, 2021.

64. **S. Orrego**, **Z. Chen**, ***U. Krekora***, **D. Hou**, **S.-Y. Jeon**, M. Pittman, C. Montoya, S. H. Kang, "Bone-Inspired Adaptive Multifunctional Materials," 2021 American Society of Mechanical Engineers International Mechanical Engineering Congress & Exposition (Virtual), November 2021.

63. **L. Fang**, **Y. Yan**, O. Agarwal, J. E. Seppala, K. D. Migler, T. D. Nguyen, S. H. Kang, "Methods to Estimate the Effective Young's Modulus of Specimens Prepared by Fused Filament Fabrication," 2021 American Society of Mechanical Engineers International Mechanical Engineering Congress & Exposition (Virtual), November 2021.

62. S. H. Kang, "Multi-phase Multifunctional Materials that Sense Mechanical Loading and Adapt," 2021 Spring Materials Research Society Meeting (Virtual), April 21, 2021.

61. S. H. Kang, "Architected Liquid Crystalline Elastomers with Strain Rate-Adaptive Extreme Energy Absorption," 2021 Spring Materials Research Society Meeting (Virtual), April 20, 2021.

60. S. H. Kang, "Bioinspired Materials with Self-Adaptable Mechanical Properties," 2021 American Physical Society March Meeting (Virtual), March 2021.

59. S. H. Kang, "Effects of Environmental Temperature and Humidity on the Geometry and Strength of Polycarbonate Specimens Prepared by Fused Filament Fabrication," 2021 American Physical Society March Meeting (Virtual), March 2021.

58. S. H. Kang, "Mechanical Metamaterials with Strain-Rate Adaptive Energy Absorption," 2021 American Physical Society March Meeting (Virtual), March 2021.

57. S. H. Kang, "Bioinspired Materials with Self-Adaptable Mechanical Behaviors," 2020 Fall Materials Research Society Meeting (Virtual), November 2020.

56. S. H. Kang, "Vent-Lock—A Bioinspired Ventilator Splitter to Enhance the Capacity of Treating Patients with COVID-19," 2020 Fall Materials Research Society Meeting (Virtual), November 2020.

55. **S. Jeon, Z. Zhu,** N. Traugutt, **B. Shen,** T. D. Nguyen, C. M. Yakacki, and S. H. Kang, "Extreme Energy Absorbing Architected Materials Based on Liquid Crystal Elastomers," American Society of Mechanical Engineers International Mechanical Engineering Congress and Exposition (Virtual), November 2020.

54. **S. Jeon, Z. Zhu,** N. Traugutt, **B. Shen,** T. D. Nguyen, C. M. Yakacki, and S. H. Kang, "Extreme energy absorbing architected materials based on liquid crystal elastomer structures," Society of Engineering Science Annual Meeting (Virtual Live Talk), September 2020.

53. **S. Orrego**, **Z. Chen**, ***U. Krekora***, **D. Hou**, **S. Jeon**, M. Pittman, C. Montoya, Y. Chen, S. H. Kang, "Bioinspired materials with self-adaptable mechanical behaviors," Society of Engineering Science Annual Meeting (Virtual Live Talk), September 2020.

52. **E. Bachtiar**, **G. O. Erol**, M. Millrod, **R. Tao**, D. H. Gracias, L. H. Romer, and S. H. Kang, "3D printing and characterization of a soft and biostable elastomer with high flexibility and strength for biomedical applications," Society of Engineering Science Annual Meeting (Virtual Live Talk), September 2020.

51. **S. Orrego**, **Z. Chen**, ***U. Krekora***, **D. Hou**, **S. Jeon**, M. Pittman, C. Montoya, Y. Chen, S. H. Kang, "Bioinspired Multifunctional Composites with Self-Adaptable Mechanical Properties," Gordon Research Conference on Multifunctional Materials and Structures, Ventura, CA, January 2020.

50. S. H. Kang, "Multifunctional Materials with Self-Adaptive Mechanical Properties and Regeneration," Materials Research Society Meeting, Boston, MA, December 2019.

49. **S. Jeon, Z. Zhu,** C. M. Yakacki, T. D. Nguyen, and S. H. Kang, "Extreme impact energy absorption behaviors of liquid crystal elastomer structures," ASME International Mechanical Engineering Congress and Exposition, Salt Lake City, UT, November 2019.

48. **G. O. Erol**, **E. Bachtiar**, **A. Horowitz**, N. Hibino, L. H. Romer, D. H. Gracias, and S. H. Kang, "Self-adaptive cardiovascular implants to accommodate growth," ASME International Mechanical Engineering Congress and Exposition, Salt Lake City, UT, November 2019.

47. **L. Fang, Y. Yan,** O. Agarwal, K. J. Hemker, and S. H. Kang, "Processing-structure-property relationships of polycarbonate samples prepared by fused filament fabrication," ASME International Mechanical Engineering Congress and Exposition, Salt Lake City, UT, November 2019.

46. **L. Fang, Y. Yan,** O. Agarwal, K. J. Hemker, and S. H. Kang, "Effects of environmental temperature and humidity on the geometry and strength of polycarbonate specimens prepared by fused filament fabrication," ASME International Mechanical Engineering Congress and Exposition, Salt Lake City, UT, November 2019.

45. **S. Jeon, Z. Zhu,** C. M. Yakacki, T. D. Nguyen, and S. H. Kang, "Extreme impact energy trapping metamaterials based on liquid crystal elastomers," 56 Annual Technical Meeting of the Society of Engineering Science, St. Louis, MO, October 2019.

44. **L. Fang, Y. Yan,** O. Agarwal, K. J. Hemker, and S. H. Kang, "Geometrical and mechanical characterization of interlayer bonding quality in fused filament fabrication of polycarbonate," 56 Annual Technical Meeting of the Society of Engineering Science, St. Louis, MO, October 2019.

43. Z. Jiang, **G. O. Erol, D. Chatterjee, W. Xu**, N. Hibino, L. H. Romer, S. H. Kang, and D. H. Gracias, "3D printing of polytetrafluoroethylene with direct ink writing," 56 Annual Technical Meeting of the Society of Engineering Science, St. Louis, MO, October 2019.

42. **G. O. Erol**, **E. Bachtiar**, **A. Horowitz**, N. Hibino, L. H. Romer, D. H. Gracias, and S. H. Kang, "Self-adaptive cardiovascular pediatric conduits to accommodate growth," 56 Annual Technical Meeting of the Society of Engineering Science, St. Louis, MO, October 2019.

41. **G. O. Erol**, **E. Bachtiar**, **A. Horowitz**, N. Hibino, L. H. Romer, D. H. Gracias, and S. H. Kang, "3D Printed Shape-Adaptive Right Ventricle-to-Pulmonary Artery Conduits with Growth Potential," 2019 International Conference on Bioengineering and Nanotechnology, Baltimore, MD, May 2019.

40. **G. O. Erol**, **E. Bachtiar**, **A. Horowitz**, N. Hibino, L. H. Romer, D. H. Gracias, and S. H. Kang, "Bioinspired "growing" RV-PA conduits for pediatric patients with congenital heart defects," the 6th International Conference on Clinical and Engineering Frontiers in Pediatric and Congenital Heart Disease, Philadelphia, PA, May 2019.

39. **S. Orrego**, **Z. Chen, D. Hou**, ***U. Krekora***, ***E. Kang***, S. H. Kang, "Bioinspired materials with self-regulating mechanical properties upon loading/damages," American Physical Society March Meeting, Boston, MA, March 2019.

38. **G. O. Erol**, **E. Bachtiar**, **A. Horowitz**, N. Hibino, L. H. Romer, D. H. Gracias, and S. H. Kang, "3D Printed Shape-Changing Cardiovascular Implants for Accommodating Growth," ASME International Mechanical Engineering Congress and Exposition, Pittsburgh, PA, November 2018.

37. **S. Orrego**, ***U. Krekora***, **D. Hou**, *E. Kang*, S. H. Kang, "Bioinspired materials with self-adaptable mechanical properties and self-regeneration by coupling mechanics and chemistry using soft stimuli-responsive scaffolds," ASME International Mechanical Engineering Congress and Exposition, Pittsburgh, PA, November 2018.

36. **L. Fang**, **J. Li**, **Z. Zhu**, and S. H. Kang, "Piezoelectric polymer thin films with architected cuts for enhanced flexibility and ambient wind energy harvesting," ASME International Mechanical Engineering Congress and Exposition, Pittsburgh, PA, November 2018.

35. S. H. Kang, **G. O. Erol**, **E. Bachtiar**, and **A. Horowitz**, "Architected Cardiovascular Implants for Accommodating Growth," IUTAM Symposium on Architectured Materials, Chicago, IL, September 2018.

34. **L. Fang**, **J. Li**, **Z. Zhu**, S. H. Kang, "Piezoelectric polymer thin films with architected cuts," European Solid Mechanics Conference, Bologna, Italy, July 2018.

33. **S. Orrego**, ***U. Krekora***, **D. Hou**, *E. Kang*, S. H. Kang, "Bioinspired materials with self-adaptable mechanical properties and self-regeneration," Gordon Research Conference (Bioinspired Materials), Les Diablerets, Switzerland, June 2018.

32. **J. Li**, **Z. Zhu**, **L. Fang**, S. Guo, U. Erturun, Z. Zhu, J. E. West, S. Ghosh, and S. H. Kang, "Analytical, numerical, and experimental studies of viscoelastic effects on the performance of soft piezoelectric nanocomposites," 18th U.S. National Congress for Theoretical and Applied Mechanics, Chicago, IL, June 2018.

31. **S. Orrego**, ***U. Krekora***, ***E. Kang***, and S. H. Kang, "Bioinspired materials with self-adaptable mechanical properties and self-regeneration," 2018 American Physical Society March Meeting, Los Angeles, CA, March 2018.

30. **S. Orrego**, ***U. Krekora***, ***E. Kang***, and S. H. Kang, "Bioinspired materials with self-adaptable mechanical properties and self-regeneration," 7th International Conference on Mechanics of Biomaterials and Tissues, Waikoloa, HI, December 2017.

29. **J. Li**, Z. Zhu, **L. Fang**, S. Guo, U. Erturun, Z. Zhu, J. E. West, S. Ghosh, and S. H. Kang, "Viscoelastic Effects on the Performance of Soft Piezoelectric Nanocomposites," ASME 2017 International Mechanical Engineering Congress, Tampa, FL, November 2017.

28. S. H. Kang, "A Bidirectional Self-Folding Actuator Based on Bilayer Shape Memory Polymers and Its Application to a Self-Folding Transformer," ASME 2016 International Mechanical Engineering Congress, Phoenix, AZ, November 2016.

27. S. H. Kang, "Harnessing Deformation of Soft Materials for Multifunctionality," Gordon Research Conference (Multifunctional Materials and Structures), Ventura, CA, February 2016.

26. S. H. Kang, S. Shan, J. R. Raney, P. Wang, J. Lewis, and K. Bertoldi, "Architected Materials for Reversible Trapping of Elastic Strain Energy," Materials Research Society Fall Meeting, Boston, MA, December 2015.

25. S. H. Kang, S. Shan, J. R. Raney, P. Wang, J. Lewis, and K. Bertoldi, "Design and Fabrication of Shape-Recoverable Energy-Absorbing Structures by Numerical Modeling and 3D Printing," ASME 2015 International Mechanical Engineering Congress, Houston, TX, November 2015.

24. S. H. Kang, S. Shan, J. R. Raney, P. Wang, F. Candido, J. Lewis, and K. Bertoldi, "Harnessing Snapthrough Instability for Shape-Recoverable Energy-Absorbing Structure," American Physical Society March Meeting, San Antonio, TX, March 2015.

23. S. H. Kang, S. Shan, F. Candido, and K. Bertoldi, "Shape Programmable Metamaterials," Materials Research Society Meeting, San Francisco, CA, April 2014.

22. S. H. Kang, S. Shan, A. Kosmrlj, and K. Bertoldi, "Formation of Complex Ordered Patterns in Buckling Induced Geometrically Frustrated Triangular Cellular Structures," Materials Research Society Meeting, San Francisco, CA, April 2014.

21. S. H. Kang, S. Shan, A. Kosmrlj, W. Noorduin, S. Shian, D. R. Clarke, and K. Bertoldi, "Complex Ordered Patterns in Mechanical Instability Induced Geometrically Frustrated Triangular Cellular Structures," American Physical Society March Meeting, Denver, CO, March 2014.

20. S. H. Kang, S. Shan, and K. Bertoldi, "Experiments, Modeling, and Analysis of Geometrically Frustrated Cellular Structures," Materials Research Society Meeting, Boston, MA, December 2013.

19. S. H. Kang, S. Shan, A. Kosmrlj, and K. Bertoldi, "Formation of Three Ordered Patterns by Two-Step Bifurcation of Geometrically Frustrated Cellular Structures," ASME 2013 International Mechanical Engineering Congress, San Diego, CA, November 2013.

18. S. H. Kang and J. Aizenberg, "Self-Organization of Polymer Nanofiber Arrays for Bioinspired Multifunctional Systems," ASME 2013 International Mechanical Engineering Congress, San Diego, CA, November 2013.

17. S. H. Kang, S. Shan, A. Kosmrlj and K. Bertoldi, "Complex Patterns with Tunability by Coupling Mechanical Instability with Geometrical Frustration," New England Workshop on the Mechanics of Materials and Structures, Boston, MA, October 2013.

16. S. H. Kang, S. Shan, and K. Bertoldi, "Formation of Complex Ordered Patterns by Harnessing Mechanical Instability in Geometrically Frustrated Lattices," Society of Engineering Science 50th Annual Technical Meeting,

Providence, RI, July 2013.

15. S. H. Kang, S. Shan, and K. Bertoldi, "Coupling Geometrical Frustration with Mechanical Instabilities to Design Surfaces with Three Dynamically Changing States," American Physical Society March Meeting, Baltimore, MD, March 2013.

14. S. H. Kang, S. Shan, W. Noorduin, M. Khan, K. Bertoldi, and J. Aizenberg, "Chiral Pattern Formation in Polymer-Based Supported Cellular Structures by Elastic Instability," Materials Research Society Meeting, Boston, MA, November 2012.

13. S. H. Kang, N. Wu, A. Grinthal, and J. Aizenberg, "Capillary-Induced Self-Organization of Soft Pillar Arrays into Moiré Patterns by Dynamic Feedback Process," American Physical Society March Meeting, Boston, MA, March 2012.

12. S. H. Kang, L. Mahadevan, and J. Aizenberg, "Pattern Formation by Self-Organization of Biologically-Inspired Fibrous Surfaces," Growth and Form: Pattern Formation in Biology, Aspen, CO, January 2012.

11. S. H. Kang, S. Shan, W. Noorduin, M. Khan, K. Bertoldi, and J. Aizenberg, "Instability-Induced Chiral Structure Formation in Surface-Attached Honeycombs," Materials Research Society Meeting, Boston, MA, November 2011.

10. S. H. Kang, S. Shan, W. Noorduin, M. Khan, K. Bertoldi, and J. Aizenberg, "Buckling-Induced Chiral Pattern Formation in Rationally Designed Surface-Attached Honeycombs," New England Workshop on the Mechanics of Materials and Structures, Cambridge, MA, October 2011.

9. T.-S. Wong, S. H. Kang, S.K.Y. Tang, and J. Aizenberg, "Robust Slippery Surfaces as Optically Transparent, Oleophobic, and Anti-icing Materials," 14th Nano Science and Technology Institute (NSTI) Nanotech Conference and Expo, Boston, MA, June 2011.

8. S. H. Kang, B. Pokroy, L. Mahadevan, and J. Aizenberg, "Self-Assembly of Nanofibers with Controlled Hierarchy and Shape by Adhesion Mediated Elastocapillary Interaction," NSF Workshop and Freund Symposium on Frontiers of Mechanics Research, Providence, RI, June 2011.

7. S. H. Kang, N. Wu, L. Mahadevan, and J. Aizenberg, "Meniscus Lithography: Using Moiré Effect for Controlling Self-Assembly by Evaporation," New England Complex Fluid Meeting, New Haven, CT, March 2011.

6. S. H. Kang, N. Wu, and J. Aizenberg, "Controlling Hierarchical Self-Assembly of Polymer Bristles by Manipulating Meniscus Movement," Materials Research Society Meeting, Boston, MA, November 2010.

5. S. H. Kang, B. Pokroy, L. Mahadevan, and J. Aizenberg, "Dynamic Wetting of Soft Fibrous Surface," Faraday Discussion 146 - Wetting, Richmond, VA, April 2010.

4. S. H. Kang, N. Wu, L. Mahadevan, and J. Aizenberg, "Fine Tuning of Pattern Formation in Evaporation-Induced Self-Assembly of Polymer Bristles," Materials Research Society Meeting, San Francisco, CA, April 2010.

3. S. H. Kang, B. Pokroy, L. Mahadevan, and J. Aizenberg, "Controlled Assembly of Biologically Inspired Arrays of Polymeric Fibers: Potential Applications," Materials Research Society Meeting, Boston, MA, November 2009.

2. S. H. Kang, N. Wu, and J. Aizenberg, "Effects of Meniscus Formation and Movement on Self-Assembly of Polymer Post Arrays," Kavli Institute, Cambridge, MA, November 2009.

1. S. H. Kang, B. Pokroy, L. Mahadevan, and J. Aizenberg, "Capillary Induced Chiral Self-Organization of High Aspect Ratio Polymeric Nanoposts: Investigating the Effects of Geometry and Elasticity," Gordon Research Conference (Soft Condensed Matter Physics), New London, NH, August 2009.

FUNDING

[Current]

Air Force Office of Scientific Research (PI) Aug. 2021-Aug. 2025
- *Avian Bone-Inspired Lightweight Self-Adapting and Damage-Mitigating Materials*. Total award: $604,819

Department of Defense Congressionally Directed Medical Research Programs (Co-PI) Mar. 2023-Feb. 2025
- *3D-Printed Antithrombogenic Sutureless Device for Vascular Anastomosis*. Total award: $305,857

Johns Hopkins University Discovery Award (Co-PI) Sep. 2023-Aug. 2024
- *Personalized Intestinal Reconstruction Without Surgery*. Total award: $100,000

[Completed]

Air Force Office of Scientific Research Young Investigator Program (PI) Jan. 2018-Jan. 2022
- *Bioinspired Synthesis of Multifunctional Materials with Self-Adaptable Mechanical Properties and Self-regeneration*. Total award: $450,000

Bisciotti Foundation Translational Fund (PI) Feb. 2021-May 2022
Vaso-Lock: Replacing Sutures for Faster, Easier and Safer Microvascular and Vascular Anastomosis. Total award: $50,000

Hanwha Non-Tenured Faculty Award (PI) Jul. 2022-Jul. 2023
- *Multifunctional Materials with Self-Adaptable Mechanical Properties.* Total award: $12,000

Air Force Office of Scientific Research (Co-PI) Feb. 2022-Jan. 2023
- *Acquisition of Atomic Force Microscope for Dynamic Topographical and Mechanical Characterization of Biomaterials***.** Total award: $123,975 (Defense University Research Instrumentation Program (DURIP))

Johns Hopkins Catalyst Award (PI) Dec. 2020-Dec. 2022
- *Reprogrammable Architected Materials: Decoupling Form From Functions.* Total award: $75,000

Maryland Innovation Initiative (PI) Jan. 2021-Dec. 2021
- *Vaso-Lock: Replacing Sutures for Faster, Easier and Safer Microvascular and Vascular Anastomosis.* Total award: $115,000

National Science Foundation DMREF Program (Co-PI) Sep. 2016-Dec. 2021
- *Predictive Multiscale Modeling of the Mechanical Properties of Polymers 3D Printed Using Fused Filament Fabrication*. Total award: $1,754,990

Cohen Foundation Translational Engineering Grant (PI) Mar. 2020-Jun. 2021
- *Vaso-Lock: A 3D Printed Coupling Device for Microvascular Anastomosis*. Total award: $100,000

Johns Hopkins President's Initiative on Covid-19 Medical Supply Innovation (PI) Apr. 2020
- *A Bioinspired Ventilator Splitter*. Total award: $25,000

National Institute of Health, R21/R33 Grant (Co-PI) Dec.2016-Nov. 2018
- *Self-Unfolding RV-PA 3D Printed Conduits*. Total award: $237,231

Army Research Office (Co-PI) May 2017-Apr. 2021
- *Extreme Dissipation Behavior of Main-Chain Liquid-Crystal Elastomers and Structures*. Total award: $588,585

Office of Naval Research (JHU PI) Aug. 2019-May 2021
- *Cost Effective Soft Sensors.* Total award; $671,356

Johns Hopkins University Discovery Grant (Co-PIs) Aug. 2019-Jun. 2021
- *Decoding the Biomechanics and Physics of Cetacean Biosonar*. Total award: $100,000

Johns Hopkins Environment, Energy, Sustainability & Health Institute (Co- PI) Jul. 2015-Jun. 2016
- *Harvesting Energy from Flow-Induced Flutter of 'Piezoleaves' for Self-Powered Sensors*. Total award: $25,000

PROFESSIONAL SOCIETIES AND SERVICE

Editorial Board Member – Journal of Physics: Materials (January 2023-December 2024), Sensors (August 2020-Present), Multifunctional Materials (June 2020-December 2022), Scientific Reports (November 2014-October 2017)

Guest Editor – November 2024 Issue of Materials Research Society Bulletin ("Dynamically Adaptive Materials"), Special Issue on Soft Composite-Based Sensor of journal Sensors (2021), February 2016 Issue of Materials Research Society Bulletin ("Beyond Conventional Lithography: Patterning via Self-Organization and Self-Folding").

Member - Materials Research Society, American Society of Mechanical Engineers, American Physical Society, Society of Engineering Science.

Journal Reviewer – Nature, Science, Nature Materials, Advanced Materials, Science Advances, Science Robotics, Additive Manufacturing, Advanced Functional Materials, Proceedings of the National Academy of Sciences, ACS Nano, Nanoscale, ACS Applied Materials & Interfaces, Applied Energy, Advanced Intelligent Systems, Chemical Engineering Journal, ACS Applied Energy Materials, Journal of the Mechanics and Physics of Solids, Extreme Mechanics Letters, Journal of Applied Mechanics, International Journal of Solids and Structures, Journal of Mechanics of Materials and Structures, Soft Matter, Composites Part A, Advanced Composite Materials, Matter, Smart Materials and Structures, Bioinspiration & Biomimetics, Advanced Materials Technologies, Advanced Engineering Materials, Regenerative Engineering and Translational Medicine, ACS Applied Polymer Materials, Materials and Design, Journal of Applied Polymer Science, 3D Printing and Additive Manufacturing, Journal of Mechanical Design, Langmuir, Applied Physics Letters, Materials Today Bio, Micromachines, MRS Advances, Research.

Proposal Reviewer - National Science Foundation, Army Research Office, National Institutes of Health, American Chemical Society Petroleum Research Fund, Agency for Science, Technology and Research, Israel Science Foundation, Israel Ministry of Science & Technology, Dutch Research Council (NOW), Fonds de recherche du Québec.

University Ranking Survey Invitee – 2023, 2022, 2021, 2020, 2018, 2017 QS Global Academic Survey, 2024 Times Higher Education Global Academic Reputation Survey.

Invited Workshop Attendee
Invitee, First U.S.-Africa Frontiers of Science, Engineering, and Medicine Symposium October 2022
- *one of ~40 US participants representing science, engineering, and medicine*

Invitee, NSF Workshop on Architected Metamaterials for Civil Infrastructure May 2022

Invitee, Department of Energy, Advanced Research Projects Agency-Energy (ARPA-E) December 2019

- Bioinspired Design Workshop

Invitee, China-America Frontiers of Engineering Symposium June 2019
- 60 early-career engineers from Chinese and US universities, industry, and government are invited to facilitate international cooperation and understanding.

Invitee, ARO Workshop on the Future of Vibration Energy Transfer in Solids and Structures October 2016

Invitee, National Academy of Engineering's US Frontiers of Engineering Symposium September 2016
- 100 engineers, generally 30-45 years old from industry, universities, and government labs are invited to represent the full range of engineering fields.

Invitee, NSF Workshop on Interdisciplinary Frontiers of Designing Engineering Material Systems July 2016

Professional Society Technical Committee Leadership - Chair (2020), Vice Chair (2019), Secretary (2018), Editor (2017), ASME Technical Committee on Mechanics of Soft Materials

Scientific Committee Membership – Member of the Polymer Scientific Committee for the National Institute of Standards and Technology (NIST) AM-Bench 2021: Additive Manufacturing Benchmark Test Series

Conference Track Co-Chair
Society of Engineering Science Annual Meeting – Track on Frontiers in Mechanics of Materials 2020

Conference Symposium Co-Organizer (33 symposia)

The 8th International Conference on Electronic Materials and Nanotechnology for Green Environment 2024
- Steering Committee Member (Global Cooperation)

Materials Research Society Fall Meeting 2021
- Additive Manufacturing: From Material Design to Emerging Applications
American Physical Society March Meeting – Focus Session on Physics of Bioinspired Materials 2021

American Physical Society March Meeting – Focus Session on Mechanical Metamaterials 2020
Multiscale Materials Modeling – Multiscale Modeling of Polymers and Soft Materials 2020
Society of Engineering Science Annual Meeting – Mechanics and Physics of Soft Materials 2020
Society of Engineering Science Annual Meeting – 3D/4D Printed Materials 2020
ASME International Mechanical Engineering Congress & Exposition – Mechanics of Soft Materials 2020
ASME International Mechanical Engineering Congress & Exposition – 3D Printed Soft Materials 2020
ASME International Mechanical Engineering Congress & Exposition – Mechanical Metamaterials 2020
Materials Research Society Fall Meeting – Lessons from Nature: From Biology to Bioinspired Materials 2020
American Physical Society March Meeting – Focus Session on Mechanical Metamaterials 2019
American Physical Society March Meeting – Focus Session on Physics of Bioinspired Materials 2019
ASME International Mechanical Engineering Congress & Exposition – Mechanics of Soft Materials 2019
ASME International Mechanical Engineering Congress & Exposition – Mechanical Metamaterials 2019
ASME International Mechanical Engineering Congress & Exposition – 3D Printed Soft Materials 2019
Society of Engineering Science Annual Meeting – 3D/4D printed functional materials and structures 2019
Society of Engineering Science Annual Meeting – Mechanical Metamaterials 2019
Society of Engineering Science Annual Meeting – Mechanics and Physics of Soft Materials 2019

American Physical Society March Meeting – Focus Session on Mechanical Metamaterials 2018
American Physical Society March Meeting – Focus Session on Physics of Bioinspired Materials 2018
American Physical Society March Meeting 2018
- Invited Session on Lessons from Biological Soft Materials and Their Applications
ASME International Mechanical Engineering Congress & Exposition – Mechanics of Soft Materials 2018

ASME International Mechanical Engineering Congress & Exposition – Mechanical Metamaterials 2018
ASME International Mechanical Engineering Congress & Exposition – 3D Printed Soft Materials 2018
U.S. National Congress for Theoretical and Applied Mechanics 2018
- Mechanics and Physics of Soft Materials: Instability and Manufacturing of Soft Materials
U.S. National Congress for Theoretical and Applied Mechanics 2018
- Mechanics and Physics of Soft Materials: Soft Active Materials

American Physical Society March Meeting - Focus Session on Physics of Bioinspired Materials 2017
Society of Engineering Science Annual Meeting - Mechanics of 3D Printed Materials and Structures 2017
ASME International Mechanical Engineering Congress & Exposition – Mechanics of Soft Materials 2017
ASME International Mechanical Engineering Congress & Exposition – Mechanical Metamaterials 2017
American Physical Society March Meeting – Focus Session on Physics of Bioinspired Materials 2016
Society of Engineering Science Annual Meeting - Mechanics of 3D Printed Materials and Structures 2016
ASME International Mechanical Engineering Congress & Exposition - 3D Printed Soft Materials 2016

Conference Student Poster Competition Judge
Society of Engineering Science Annual Meeting 2017

Career Development Workshop Co-Organizer
Korean American Scientists and Engineers Association (KSEA) Scientists and Engineers Early Career Development (SEED) Workshop (Arlington, VA) 2022

External Thesis Committee Member
Ms. Mohadese Beigtan (Ph.D. candidate in Materials Science & Engineering at Sungkyunkwan University) 2023
Ms. Marta Gonçalves (Ph.D. candidate in Materials Science and Engineering at Sungkyunkwan University) 2022
Mr. Yu-Ki Lee (Ph.D. candidate in Materials Science and Engineering at Seoul National University) 2021
Ms. Hadar Shaked (Ph.D. candidate in Materials Science and Engineering at Technion-Israel Institute of Technology) 2021
Ms. Hyoeun Kim (M.S. candidate in Materials Science and Engineering at Sungkyunkwan University) 2021

SERVICE FOR UNIVERSITY, DEPARTMENT AND INSTITUTE

Johns Hopkins Dept. of Medicine-Whiting School of Engineering Retreat Award Committee January 2021
Johns Hopkins University Commencement Marshal May 2018
5th Annual Johns Hopkins Postdoctoral Retreat Oral Presentation Competition Judge May 2018
Johns Hopkins Institute for NanoBioTechnology Annual Symposium Poster Competition Judge May 2018
Faculty Mentoring Focus Group – Whiting School of Engineering May 2015

Thesis Committee Member (22 times)

Mr. Justin Unger (Ph.D. candidate in Civil and Systems Engineering) Sep 2023
"Topology Optimization for Anisotropies in Additive Manufacturing"

Mr. Caleb Andrews (Ph.D. candidate in Materials Science and Engineering) Aug 2023
"Microscale Strain Engineering in Architected Lattice Materials"

Ms. Valerie Rennoll (Ph.D. candidate in Electrical and Computer Engineering) May 2023
"Acoustic impedance-matched sensor developed toward wearable body sound monitoring"

Ms. Tessa van Volkenburg (Doctor of Engineering candidate) April 2023
"Aqueous sample preparation for improved in situ biosignature detection at ocean worlds"

Mr. Ojaswi Agarwal (Ph.D. candidate in Materials Science and Engineering) June 2022
"Investigating Polycarbonate Welds Made with Fused Filament Fabrication"

Ms. Gayatri Jayant Pahapale (Ph.D. candidate in Chemical and Biomolecular Engineering) March 2022
"Microfabricated biomimetic hydrogel platforms to investigate the role of physical cues on cell behavior"

Ms. Arunima Banerjee (Ph.D. candidate in Mechanical Engineering) October 2021
"Study of the Microstructure and Attendant Mechanical Response of Additively Manufactured In625 Thin-Walled Structures"

Mr. Xiaofan Zhang (Ph.D. candidate in Civil Engineering) July 2021
"Parametrically homogenized continuum damage mechanics (PHCDM) models for unidirectional fiber-reinforced composites"

Mr. Lichen Fang (Ph.D. candidate in Mechanical Engineering) April 2020
"Characterization and Optimization of Geometrical Accuracy and Mechanical Properties of Specimens Prepared by Fused Filament Fabrication"

Mr. Philip Dorsey (Ph.D. candidate in Chemical and Biomolecular Engineering) January 2020
"Towards spatial computing and chemical information storage in soft materials using DNA programming"

Mr. Wangqu Liu (MSE candidate in Chemical and Biomolecular Engineering) July 2019
"3D printing of multi-functional hydrogels"

Mr. Jiayu Liu (Ph.D. candidate in Mechanical Engineering) May 2019
"Mechanics-based design of stimuli-responsive hydrogel structures and devices"

Ms. Wenlu Wang (MSE candidate in Chemical and Biomolecular Engineering) May 2019
"A digital maskless photolithographic patterning method for UV-photocleavable PEGDA hydrogels with a camphorquinone-triethanolamine photoinitiator"

Mr. Philip Dorsey (Ph.D. candidate in Chemical and Biomolecular Engineering) 2018, 2019

Mr. Angelo Cangialosi (Ph.D. candidate in Chemical and Biomolecular Engineering) May 2018
"DNA Programmable Soft Matter Devices"

Mr. Zhiren Zhu (MSE candidate in Civil Engineering) August 2017
"Computational Analysis of Piezoelectric Systems Using a Coupled Multiphysics Finite Element Model"

Mr. Shu Guo (Ph.D. candidate in Civil Engineering) April 2017
"A Coupled Multi-physics Analysis Model for Integrating Transient Electro-Magnetics and Structural Dynamic Fields with Damage"

Mr. Xiaotong Fu (Ph.D. candidate in Chemical and Biomolecular Engineering) December 2016
"A New Platform For Microfluidic Sample Preparation Using On-Chip Electrokinetics"

Mr. Charles Dhong (Ph.D. candidate in Chemical and Biomolecular Engineering) October 2016
"Peeling Structured Surfaces in Viscous Environments: The Role of Deformation and Drainage Channels"

Mr. Longyu Zhao (Ph.D. candidate in Materials Science) February 2016-April 2016
"Design and Characterization of Fluidic and Thermal Properties of 3D Woven Lattice Materials for Heat Exchange Applications"

Ms. Barbara Murienne (Ph.D. candidate in Mechanical Engineering) January-March 2016

"Glycosaminoglycan Contribution to the Structure-Mechanical Properties of the Posterior Sclera"

Mr. ChangKyu Yoon (Ph.D. candidate in Materials Science) May 2015-December 2016
"Design, Characterization & Application of Stimuli Responsive Self-Folding Soft Microsystems"

Graduate Board Oral Examination Committee Member (18 times)

Ms. Beijun Shen (Ph.D. candidate in Mechanical Engineering) December 2022

Mr. Adebayo Eisape (Ph.D. candidate in Electrical and Computer Engineering) August 2022

Mr. Chaojun Cheng (Ph.D. candidate in Mechanical Engineering) September 2020

Ms. Julia Carrol (Ph.D. candidate in Civil Engineering) February 2020

Ms. Sirui Bi (Ph.D. candidate in Civil Engineering) October 2019

Ms. Wei-Hung Jung (Ph.D. candidate in Mechanical Engineering) July 2019

Ms. Valerie Rennoll (Ph.D. candidate in Electrical and Computer Engineering) June 2019

Ms. Makeda Stephenson (Ph.D. candidate in Biomedical Engineering) May 2019

Mr. Mikhail Osanov (Ph.D. candidate in Civil Engineering) September 2018

Ms. May Thu Nwe Nwe (Ph.D. candidate in Civil Engineering) September 2018

Mr. Jiayu Liu (Ph.D. candidate in Mechanical Engineering) May 2018

Mr. Angelo Cangialosi (Ph.D. candidate in Chemical and Biomolecular Engineering) May 2018

Mr. Raleigh Linville (Ph.D. candidate in Biomedical Engineering) June 2017

Ms. Fatma Madouh (Ph.D. candidate in Mechanical Engineering) May, October 2017

Mr. Reza Yaghmaie (Ph.D. candidate in Civil Engineering) September 2016

Ms. Hahn Le (Ph.D. candidate in Electrical and Computer Engineering) August 2016

Mr. Longyu Zhao (Ph.D. candidate in Materials Science) April 2016

Mr. Gyeongwoo Cheon (Ph.D. candidate in Electrical and Computer Engineering) May 2015

Department Committee 2015-2023
ME Seminar Committee (Chair), Graduate Admission Committee (Member), Manufacturing Engineering ad hoc Committee (Member), Design Course ad hoc Committee (Member), Siebel Scholarship ad hoc Committee (Member)

Hopkins Extreme Materials Institute Committee 2015-Present
HEMI Seminar Committee (Chair), Academic Committee (Member)

STUDENT MENTORING AND ADVISING

Johns Hopkins University Baltimore, MD

[Postdoctoral Fellow] (total 3 postdoctoral fellows)

Dr. Seung-Yeol Jeon, Department of Mechanical Engineering October 2017-February 2020

- *Currently, Senior Scientist at Korea Institute of Science and Technology*

Dr. Galip Ozan Erol, Department of Mechanical Engineering June 2017-May 2019

- *Currently, New Product Development Technologist at W. L. Gore & Associates*

Dr. Santiago Orrego, Department of Mechanical Engineering May 2015-April 2018

- *Currently, Assistant Professor at Temple University*

[Doctoral Students] (total 9 doctoral students)

Students currently pursuing degrees

Mostafa Omar, Department of Mechanical Engineering — Fall 2020-Present

- co-advised with Prof. Jaafar El-Awady (Dept. of Mechanical Engineering)

Adebayo Eisape, Department of Electrical and Computer Engineering — Fall 2019-Present

- Microsoft PhD Fellow, co-advised with Prof. James West (Dept. of Electrical and Computer Engineering)

Bohan Sun, Department of Mechanical Engineering — Fall 2019-Present

Grant Kitchen, Department of Materials Science and Engineering — Spring 2022-Present

Beijun Shen, Department of Mechanical Engineering — Fall 2019-Present

- co-advised with Prof. Vicky Nguyen (Dept. of Mechanical Engineering)

Ailon Haileyesus, Doctor of Engineering — Summer 2023-Present

Shawn Usman, Doctor of Engineering — Summer 2021-Present

Graduated students

Lichen Fang, Department of Mechanical Engineering — Fall 2015-Summer 2020

- *Currently, Product Design Engineer at Apple*

Tessa Van Volkenburg, Doctor of Engineering — Summer 2020-May 2023

- *Currently, Sr. Materials Research Engineer at Johns Hopkins Applied Physics Laboratory*

[Master Students] (total 25 master students)

Students currently pursuing degrees

Kate Concannon, Department of Mechanical Engineering — Fall 2022-Present

Dheeraj Gudlulu, Department of Mechanical Engineering — Spring 2023-Present

Jitao Ding, Department of Mechanical Engineering — Fall 2023-Present

Chenhan Zhang, Department of Mechanical Engineering — Fall 2022

Graduated students

Julia Xia, Department of Mechanical Engineering (Leave of absence for Spring 2023) — Fall 2021-Fall 2023

- *Will join Apple as a Display Engineer in February 2024*

Yawen (Evan) Liu, Department of Mechanical Engineering — Fall 2021-Summer 2023

- *Currently, Research engineer at Allurion*

Madison Buck, Department of Mechanical Engineering — Fall 2021-Summer 2023

- *Currently, Engineer at Naval Surface Warfare Center*

Aditya Bhide, Department of Mechanical Engineering — Summer 2022-Fall 2022

- *Currently, Product development engineer at Biotex*

Vedansh Dave, Department of Mechanical Engineering — Fall 2022

Fanzhen Ding, Department of Mechanical Engineering — Fall 2020-Fall 2021

- *Currently, Research engineer at Allurion*

Zixuan Wang, Department of Biomedical Engineering — Fall 2020-Spring 2021

Runhan Tao, Department of Biomedical Engineering — Spring 2019-Spring 2021

- *Currently, Research and development engineer at Shanghai MicroPort EP*

Shengyu Yao, Department of Mechanical Engineering — Fall 2018-Spring 2020

- *Currently, Display mechanical engineer at Apple*

Zhezhi Chen, Department of Mechanical Engineering — Fall 2019-Spring 2020

- *Currently, Reliability engineer at Google*

Decheng Hu, Department of Mechanical Engineering — Fall 2017-Spring 2020

- *Currently, PhD student at Lehigh University*

Shichen Xu, Department of Mechanical Engineering — Fall 2017-Fall 2019

- *Currently, Sr. R&D engineer at Acutus Medical Inc.*

Boliang Wu, Department of Mechanical Engineering — Fall 2017-Spring 2019

- *Currently, PhD student at University of California, Los Angeles*

Yishu Yan, Department of Mechanical Engineering — Fall 2017-Spring 2019

- *Currently, PhD student at University of California, Berkeley*

Zeyu Zhu, Department of Mechanical Engineering — Fall 2017-Fall 2019

- *Currently, Mechanical engineer at SANY America*

Junjie Pan, Department of Mechanical Engineering — Fall 2017-Fall 2019

- *Currently, Mechanical engineer at Galen Robotics*

Emilio Bachtiar, Department of Mechanical Engineering — Fall 2016-Spring 2018

- *Currently, Consultant at Bain & Company after receiving PhD degree at Duke University*

Azra Horowitz, Department of Biomedical Engineering — Fall 2016-Spring 2018

- *Currently, Engineer at Cornell Medical Center*

Mohit Singhala, Center for Bioengineering Innovation and Design — Fall 2016-Spring 2017

- *Currently, PhD student at Johns Hopkins University*

Shuyang Chen, Department of Mechanical Engineering — January 2015-May 2016

- *Currently, PhD student at Rensselaer Polytechnic Institute*

Rui (Olivia) Wang, Department Materials Science and Engineering — Spring 2015-Summer 2015

- *Currently, engineer at IBM*

[Undergraduate Students] (total 14 undergraduate students)

<u>Students currently pursuing degrees</u>

Connie Weng, Department of Materials Science and Engineering — Spring 2023-Present

Dennis Ngo, Department of Biomedical Engineering — Spring 2023-Present

<u>Graduated students</u>

Sean Healy, Department of Biomedical Engineering — Spring 2021-Summer 2023

- *PhD student at Georgia Institute of Technology from Fall 2023*

Lujia Liu, Department of Mechanical Engineering Fall 2021-Summer 2022

- *Master student at Stanford University from Fall 2023*

Mitchell Simmons, Department of Materials Science and Engineering Fall 2021-Spring 2022

John Wu, Department of Mechanical Engineering Summer 2021-Spring 2022

Jaeho Lee, Department of Mechanical Engineering Summer 2020-Spring 2022

- *Currently, PhD student at Georgia Institute of Technology*

Christopher Shallal, Department of Biomedical Engineering Spring 2020-Summer 2021

- *Currently, PhD student at Harvard-MIT Health Science and Technology Program*

Rebecca Grusby, Department of Chemical and Biomolecular Engineering Spring 2018-Spring 2019

- *Currently, Patent examiner at United States Patent and Trademark Office*

Daniel Wang, Department of Mechanical Engineering Spring 2018-Spring 2019

- *Currently, Product design engineer at Apple*

Urszula Krekora, Department of Chemical and Biomolecular Engineering Spring 2016-Spring 2019

- *Currently, MD student at University of Central Florida*

Khalid Elawad, Department of Materials Science and Engineering Fall 2016-Spring 2019

- *Currently, Scientific solutions consultant at Synthace*

Eugene Kang, Department of Mechanical Engineering Summer 2016-Spring 2017

- *Currently, Mechanical engineer at Lockheed Martin*

Brett Caggiano, Department of Mechanical Engineering June-August 2016

- *Currently, Technical service specialist, Abbott/St. Jude Medical*

[Visiting Students] (total 22 visiting students)

Yiji Huang (Undergraduate student from Shanghai Jiao Tong University) Summer 2023-Fall 2023

- *Currently, PhD student at Shanghai Jiao Tong University*

Pei Liu (Undergraduate student from Dalian University of Technology) Summer 2023-Fall 2023

Mose Park (PhD student from Sungkyunkwan University) Spring 2020-Summer 2022

Hyo Eun Kim (Master student from Sungkyunkwan University) Spring 2021

Gun Oh (PhD student from Sungkyunkwan University) Spring 2020-Summer 2020

Woojun Jung (Master student from Sungkyunkwan University) Spring 2020-Summer 2020

Jonlin Chen (MD student from Department of Plastic Surgery, Johns Hopkins School of Medicine) 2020-2021

- co-advised with Dr. Gerald Brandacher during Dean's Research Fellowship

Helen Xun (MD student from Department of Plastic Surgery, Johns Hopkins School of Medicine) 2019-2020

- co-advised with Dr. Justin Sacks during Dean's Research Fellowship

Zongyi Jiang (Undergraduate student from Shichuan University) July 2019-September 2019

- *Currently, Master student at Northeastern University*

O-Chang Kwon (PhD student from Korea University) December 2018-March 2019

Somnath Sandeep (Undergraduate student from Birla Institute of Technology and Science) July 2018-Jan. 2019

- *Currently, Co-Founder of Habbit*

Binjie Li (Undergraduate student from Zhejiang University) July-September 2018

- *Currently, Master student at Duke University*

Shangtong Li (Undergraduate student from Maryland Institute College of Art) May-August 2018

- *Currently, Facilities Technician/Design Associate at DiPole Materials*

Jiaxin Xu (Undergraduate student from University of Nottingham, Ningbo, China July 2017-December 2017

Jing Li (PhD student from Wuhan University of Technology) September 2015-Auguest 2017

- *Currently, Assistant Professor at Hubei University of Technology*

Shaoyang Qu (Undergraduate student from Tsinghua University) July 2017-September 2017
- *Currently, PhD student at Purdue University*

Junjie Pan (Undergraduate student from Chongqing University January 2017-May 2017
- *Currently, Hardware engineer at Hopkins AI*

Peisheng He (Undergraduate student from Shanghai Jia Tong University) September 2016-January 2017
- *Currently, PhD student at University of California, Berkeley*

Moses Kayondo (HEMI Extreme Science intern from Morgan State University) June-August 2015, 2016

Tila Assgari (HEMI Extreme Arts intern from Maryland Institute College of Art) June-August 2016

- *Currently, Co-Founder of Citadel Skateboarding Foundation*

Zeyu Zhu (Undergraduate student from Shanghai Jia Tong University) July-September 2016
- *Currently, Mechanical engineer at SANY America*

Amanda Metcalf (HEMI Extreme Arts intern from Maryland Institute College of Art) June-August 2015

- *Currently, Project manager at Mirror NYC*

[High School Students] (total 2 high school students)

Arthur Zhu (Princeton Day School) Jan 2020-Present
- *Currently, Undergraduate student at University of Pennsylvania*

Elaine Nagahara (Poolesville Magnet High School) June-August 2019
- *Currently, Undergraduate student at Johns Hopkins University*

TEACHING

Johns Hopkins University Baltimore, MD

EN. 530.618 Fabricatology – Advanced Materials Processing (new course)

- Semesters taught: Spring 2015 - 2023

- Course description: The "Fabricatology" is a course that students can learn how to make desired shapes, structures, and surfaces across various length scales. It will introduce rich scientific and engineering knowledge related to fabrication at multiple length scales and the generated materials and mechanical systems can be utilized for studying diverse topics including energy harvesting, metamaterials, wetting, and information storage. From this course, students can learn principles and technologies to control shapes at various length scales and processes to control internal structures or surface properties for desired properties/functions. They will be also introduced to exciting recent developments in the field such as 3D printing so that they can have a comprehensive knowledge about the subject.

EN. 535.618 Fabricatology – Advanced Materials Processing (new course for Engineering Professional)

- Semesters taught: Fall 2023, Spring 2023, Fall 2022, Spring 2022

- Course description: The “Fabricatology” is a course that students can learn how to make desired shapes, structures, and surfaces across various length scales. It will introduce rich scientific and engineering knowledge related to fabrication at multiple length scales and the generated materials and mechanical systems can be utilized for studying diverse topics including energy harvesting, metamaterials, wetting, and information storage. From this course, students can learn principles and technologies to control shapes at various length scales and processes to control internal structures or surface properties for desired properties/functions. They will be also introduced to exciting recent developments in the field such as 3D printing so that they can have a comprehensive knowledge about the subject.

EN 530.436 Bioinspired Science and Technology (new course)

- Semesters taught: Fall 2023, Fall 2022, Fall 2020, Fall 2019, Fall 2016

- Course description: Nature has been a source of inspiration for scientists and engineers and it receives particular attention recently to address many challenges the human society encounter. This course will study novel natural materials/structures with unique properties, the underlying principles, and the recent development of the bioinspired materials and systems. From this course, students can learn about ingenious and sustainable strategies of organisms, open eyes about various phenomena in nature, and get inspiration for opening new directions of science and technology.

EN. 530.352 Materials Selection (redeveloped course)

- Semesters taught: Fall 2021, Fall, 2018, Fall 2017

- Course description: An introduction to the properties and applications of a wide variety of materials: metals, polymers, ceramics, and composites. Considerations include availability and cost, formability, rigidity, strength, and toughness. This course is designed to facilitate sensible materials choices and associated processes to have desired performance and to avoid catastrophic failures leading to the loss of life and property.

Instructor for EN. 530.618 Fabricatology – Advanced Materials Processing Spring 2024
- Taught graduate course on fabrication.
- 16 students from mechanical engineering and materials science and engineering enrolled.

Instructor for EN. 535.618 Fabricatology – Advanced Materials Processing Spring 2024
- Teaches online graduate course on fabrication.
- 8 students froom mechanical engineering and materials science and engineering enrolled.

Instructor for EN 530.436 Bioinspired Science and Technology Fall 2023
- Teaches an undergraduate course on bioinspired science and technology.
- 23 students with various majors (mechanical engineering, biomedical engineering, materials science and engineering) are enrolled.

Instructor for EN. 535.618 Fabricatology – Advanced Materials Processing Fall 2023
- Teaches online graduate course on fabrication.
- 18 students from mechanical engineering and materials science and engineering enrolled.

Instructor for EN. 530.618 Fabricatology – Advanced Materials Processing Spring 2023
- Taught graduate course on fabrication.
- 12 students from mechanical engineering, biomedical engineering, chemical and biomolecular engineering enrolled.

Instructor for EN. 535.618 Fabricatology – Advanced Materials Processing Spring 2023
- Taught online graduate course on fabrication.
- 10 students from mechanical engineering and materials science and engineering enrolled.

Instructor for EN 530.436 Bioinspired Science and Technology Fall 2022
- Teaches an undergraduate course on bioinspired science and technology.
- 29 students with various majors (mechanical engineering, biomedical engineering, materials science and engineering, and chemical and biomolecular engineering,) are enrolled.

Instructor for EN. 535.618 Fabricatology – Advanced Materials Processing Fall 2022
- Taught online graduate course on fabrication.
- 5 students from mechanical engineering and materials science and engineering enrolled.

Instructor for EN. 535.618 Fabricatology – Advanced Materials Processing Spring 2022
- Taught graduate course on fabrication.
- 24 students with various majors (mechanical engineering, biomedical engineering, materials science and engineering, civil engineering and chemical and biomolecular engineering) enrolled.

Instructor for EN. 535.618 Fabricatology – Advanced Materials Processing Spring 2022
- Taught online graduate course on fabrication.
- 24 students from mechanical engineering, materials science and engineering, civil engineering, and chemical and biomolecular engineering enrolled.

Instructor for EN. 530.352 Materials Selection Fall 2021
- Revised the course topics and teaches undergraduate core course on materials selection.
- 40 students from mechanical engineering and chemical and biomolecular engineering students enrolled.

Instructor for EN. 530.618 Fabricatology – Advanced Materials Processing Spring 2021
- Taught graduate course on fabrication.
- 8 students with various majors (mechanical engineering, biomedical engineering, materials science and engineering) enrolled.

Instructor for EN 530.436 Bioinspired Science and Technology Fall 2020
- Teaches an undergraduate course on bioinspired science and technology.
- 25 students with various majors (mathematics, biomedical engineering, mechanical engineering, chemical and biomolecular engineering, materials science and engineering) are enrolled.

Instructor for EN. 530.417/618 Fabricatology – Advanced Materials Processing Spring 2020
- Taught undergraduate/graduate course on fabrication.
- 20 students with various majors (mechanical engineering, engineering management, chemical and biomolecular engineering, materials science, medicine, science and the humanities) enrolled.

Instructor for EN 530.436/636 Bioinspired Science and Technology Fall 2019
- Redeveloped an undergraduate/graduate course on bioinspired science and technology.
- 32 students with various majors (biomedical engineering, mechanical engineering, chemical and biomolecular engineering) are enrolled.

Instructor for EN. 530.618 Fabricatology – Advanced Materials Processing Spring 2019
- Taught graduate course on fabrication.
- 8 students with various majors (mechanical engineering, biomedical engineering, engineering management, chemical and biomolecular engineering, electrical engineering) enrolled.

Instructor for EN. 530.809 Mechanics of Materials and Structures Graduate Seminar Spring 2019
- Guided the mechanics of materials and structures graduate student seminar series.
- 40 students from mechanical engineering enrolled.

Instructor for EN. 530.352 Materials Selection Fall 2018
- Taught undergraduate core course on materials selection.
- 45 students from mechanical engineering enrolled.

Instructor for EN. 530.417/618 Fabricatology – Advanced Materials Processing Spring 2018
- Taught undergraduate/graduate course on fabrication.
- 23 students with various majors (mechanical engineering, engineering management, chemical biomolecular engineering, chemistry) enrolled.

Instructor for EN. 530.809 Mechanics of Materials and Structures Graduate Seminar Spring 2018
- Guided the mechanics of materials and structures graduate student seminar series.
- 44 students from mechanical engineering enrolled.

Instructor for EN. 530.352 Materials Selection Fall 2017
- Taught undergraduate core course on materials selection.
- 35 students from mechanical engineering enrolled.

Instructor for EN. 530.809 Mechanics of Materials and Structures Graduate Seminar Fall 2017
- Guided the mechanics of materials and structures graduate student seminar series.
- 40 students from mechanical engineering enrolled.

Instructor for EN. 530.417/618 Fabricatology – Advanced Materials Processing Spring 2017
- Taught undergraduate/graduate course on fabrication.
- 31 students with various majors (mechanical engineering, engineering management, chemical biomolecular engineering, biomedical engineering, electrical engineering) enrolled.

Instructor for EN 530.436/636 Bioinspired Science and Technology Fall 2016
- Developed a new undergraduate/graduate course on bioinspired science and technology.
- 42 students with various majors (mechanical engineering, engineering management, biomedical engineering) are enrolled.

Instructor for EN. 530.417/618 Fabricatology – Advanced Materials Processing Spring 2016
- Taught undergraduate/graduate course on fabrication.
- 20 students with various majors (mechanical engineering, engineering management, biomedical engineering) enrolled.

Instructor for EN. 530.618 Fabricatology – Advanced Materials Processing Spring 2015
- Developed a new graduate course on fabrication.
- 24 students with various majors (mechanical engineering, engineering management, materials science, civil engineering) enrolled.

OUTREACH

Johns Hopkins University Baltimore, MD

Special Lecture and Lab Tour for KSEA Youth Science and Technology Leadership Camp August 2022
- Gave a lecture on bioinspired engineering and a lab tour for high school students

Special Lecture at Explore Engineering Innovation Program July 2022
- Gave a lecture on bioinspired engineering for high school students

Host for the visit of students and teachers from Joint Science and Technology Institute July 2018, August 2017

- Gave lectures, lab tours, and demos for middle and high school students, teachers and staffs from a DoD STEM Summer program

Invited speaker at the Center for Education Outreach June 2017, July 2016
- Gave lectures on 3D printing for high school students
Host for the visit of students and parents participating Summer program at Center for Talented Youth July 2017

Museum of Science, Boston Boston, MA

Volunteer for Nano Days April 2013, March 2011 & 2010
- Conducted interactive hands-on demonstration of nanoscience for general public of various age groups